



National Aeronautics and
Space Administration

(NASA-TM-79732) A BIBLIOGRAPHY OF PLANETARY
GEOLOGY PRINCIPAL INVESTIGATORS AND THEIR
ASSOCIATES, 1976-1978 (National Aeronautics
and Space Administration) 105 p HC A06

N78-28027

CSCI 03B 00/91

Unclas
25127

A Bibliography Of Planetary Geology Principal Investigators And Their Associates, 1976 - 1978

May 1978

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U. S. DEPARTMENT OF COMMERCE
SPRINGFIELD, VA. 22161

**A BIBLIOGRAPHY OF PLANETARY GEOLOGY
PRINCIPAL INVESTIGATORS AND THEIR ASSOCIATES,
1976—1978**

Office of Space Science
NASA Headquarters
Washington, DC 20546

CONTENTS

	<u>Page</u>
Solar System Formation, Comets, and Asteroids.	3
Planetary Satellites	17
Planetary Interiors.	21
Geological and Geochemical Constraints on Planetary Evolution	27
Impact Crater Studies	47
Volcanism Studies.	57
Eolian Studies	65
Fluvial Studies.	73
Mars Geological Mapping	79
Mercury Geological Mapping	83
Planetary Cartography.	87
Instrument Development and Techniques	91
Author/Editor Index.	99

A BIBLIOGRAPHY OF PLANETARY GEOLOGY
PRINCIPAL INVESTIGATORS AND THEIR ASSOCIATES, 1976-1978

A compilation of selected bibliographic data specifically relating to recent publications (July 1976 through March 1978) submitted by principal investigators and their associates, supported through NASA's Office of Space Science, Planetary Division, Planetary Geology Program.

Serves as a companion piece to NASA TM 79729, "Reports of Accomplishments of Planetology Programs, 1977-1978," NASA, Washington, DC, May 1978.

**SOLAR SYSTEM FORMATION,
COMETS, AND ASTEROIDS**

- Alfvén, H. and G. Arrhenius. 1976. Origin and Evolution of the Solar System. NASA Monograph, SP-345.
- Alfvén, H. 1976. On frozen-in field lines and field-line reconnection. Journal of Geophysical Research 81/22: 4019.
- Alfvén, H. and G. Arrhenius. 1976. The Role of Plasma in the Primeval Nebula. Paper presented at the IAU Colloquium No. 39, Relationships between Comets, Minor Planets, and Meteorites (Lyon, France).
- Alfvén, H. 1977. Electric currents in cosmic plasmas. Reviews of Geophysics and Space Physics 15/3: 271.
- Alfvén, H. and Per Carlqvist. 1978. Interstellar clouds and the formation of stars. Astrophysics and Space Science (in press).
- Benton, M. J. S., J. C. Brandt, L. F. Burlaga, A. H. Delsemme, H. Fechtig, M. Hanner, A. F. Nagy, M. M. Neugebauer, R. L. Newburn, H. B. O. Niemann, T. C. Owen, F. L. Scarf, Z. Sekanina, G. E. Thomas, J. Veverka, J. T. Wasson, G. W. Wetherill, L. L. Wilkening, and J. A. Wood. 1977. A first comet mission. Report of the Comet Halley Science Working Group. NASA TM-78420.
- Bus, S. J., T. Lauer, and J. Gibson. 1977. 1977 RA. Internat. Astron. Circ. No. 3111.
- Cameron, A. G. W. 1977. Formation of the outer planets and satellites. IN: Planetary Satellites (J. A. Burns, ed.). University of Arizona Press, 463-471.
- Cameron, A. G. W. 1978. The primitive solar accretion disk and the formation of the planets. Proceedings of NATO Advanced Study Institute on the Origin of the Solar System, in press.
- Cameron, A. G. W. 1978. Physics of the primitive solar accretion disk. The Moon and the Planets, in press.
- Cameron, A. G. W. 1978. Physics of the primitive solar nebula and of giant gaseous protoplanets. To appear in proceedings of Protostars and Planets conference.
- Cameron, A. G. W. and J. B. Pollack. 1976. On the origin of the solar system and of Jupiter and its satellites. IN: Jupiter (T. Gehrels and M. S. Matthews, eds.). University of Arizona Press, 61-84.
- Cameron, A. G. W. and J. W. Truran. 1977. The supernova trigger for formation of the solar system. Icarus, 30, 447-461.
- A. Carusi, F. Pozzi. "A new method for close encounters computation." In preparation (1978).

- A. Carusi, E. Massaro. "Discrepancies in the data on the data on the Great Fireball of August 10, 1972." *Astrophysical Letters* - Vol. 17, pag. 113-114, - 1976.
- A. Carusi, E. Massaro. "A statistical investigation of Asteroid families: preliminary results." *Comets Asteroids Meteorites* - A. H. Delsemme Ed. - The University of Toledo, pag. 327 - 1977.
- A. Carusi, F. Pozzi. "Planetary close encounters: A statistical analysis of 2820 events." In preparation (1978).
- A. Carusi, E. Massaro. "Asteroid families" Submitted to *Astronomy and Astrophysics*.
- Chapman, C. R. 1976. Asteroids and comets. (Article in "A Geological Basis for the Exploration of the Planets," ed. R. Greeley and M. H. Carr, NASA Special Publ. SP-417.)
- Chapman, C. R. 1977. The evolution of asteroids as meteorite parent-bodies. In Comets, Asteroids, Meteorites - Interrelations, Evolution and Origins (Proc. IAU Colloq. 39, ed. A. H. Delsemme, Univ. Toledo Publ.), 265-275.
- Chapman, C. R. 1977. The evolution of asteroids and meteorite parent-bodies (extended abstract). Meteoritics 12:191.
- Chapman, C. R. 1978. Asteroid collisions, craters, regoliths, and lifetimes. In Proc. NASA Asteroid Workshop, in press.
- Chapman, C. R., Greenberg, R., and Davis, D. R. 1977. Asteroid fragmentation processes and collisional evolution. Eighth Planetary Geology Principal Investigators' Symposium.
- Chapman, C. R., Greenberg, R., and Davis, D. R. 1977. Asteroid fragmentation processes and collisional evolution. Eighth Planetary Geology Principal Investigators' Symposium.
- A. Coradini, C. Federico, G. Magni. "Accretion processes in the Early Solar System." *Geologica Romana*, XV; pag. 481 - 1976.
- A. Coradini, C. Federico, G. Magni. "Grains accretion processes in a protoplanetary nebula II: accretion time and mass limit." *Astroph. and Space Sci.*, pag. 79 - 1977.
- A. Coradini, G. Magni, C. Federico. "Accretion processes in a protoplanetary Nebula: Collisions and condensations of melted grains." *Lunar Science VIII* - LSI, pag. 207 - 1977.
- A. Coradini, G. Magni, C. Federico. "The role of pre-solar grains in the early Solar System." NASA TM X-3511 - NASA, Washington, D.C. May 1977 pag. 11.

- A Coradini, G. Magni, C. Federico. "Grains accretion processes in a protoplanetary Nebula III: effects of the presence of liquid drops." *Astrophysics and Space Sci.* (In press).
- A. Coradini, G. Magni, C. Federico. "Hydrodynamics of grains in the solar nebula" *Lunar Science IX - LSI*, - 1978.
- A. Coradini, M. Fulchignoni, O. Fanucci, A. I. Gavrishin. "A fortran V program for a new statistical technique: the G-mode central method." *Computers and Geosciences*, pag. 85 - 1977.
- Davis, D. R., and Chapman, C. R. 1977. The collisional evolution of asteroid compositional classes (extended abstract). *Lunar Science VIII*, 224-226.
- DeCampi, W. M., A. G. W. Cameron, P. Bodenheimer, and D. C. Black. 1978. Ortho and para-hydrogen in dense clouds, protoplanets, and planetary atmospheres. *Astrophys. J.*, in press.
- Dubinin, E. M., I. M. Podgorny, Yu. M. Potanin and C. P. Sonett. 1977. Laboratory simulation of a diamagnetic magnetosphere. *Geophysical Research Letters* 4/391.
- Gaffey, M. J., and T. B. McCord. 1976. Asteroid surface materials. *Lunar Science VII*, 275-277. Lunar Science Institute, Houston.
- Gaffey, M. J., and T. B. McCord. 1976. Asteroids: A source of natural resources for terrestrial and extra-terrestrial applications. IN: *Lunar Utilization, Proceedings of a Special Session of the Seventh Lunar Science Conference*, 143-147.
- Gaffey, M. J., E. F. Helin, and B. O'Leary. 1977. An assessment of near-Earth asteroid resources. *Proceedings of the NASA/Ames Summer Study on Space Settlements*, NASA Special Publication in press.
- Gaffey, M. J., and T. B. McCord. 1977. Asteroid surface materials from reflectance spectroscopy: A review. *Proceedings of the IAU Col. No. 39 on Comets, Asteroids, Meteorites - Interrelations, Evolution and Origins*, 199-218. Lyons, France.
- Gaffey, M. J., and T. B. McCord. 1977. Mineralogical characterizations of asteroid surface materials from reflectance spectroscopy: A review. *Proceedings of the Third Princeton/AIAA Conference on Space Manufacturing Facilities*.
- Gaffey, M. J., and T. B. McCord. 1977. Asteroid surface materials: Mineralogical characterizations and cosmological implications. *Proceedings of the Eighth Lunar Science Conference*, 113-143.

- Gaffey, M. J., and T. B. McCord. 1977. Mining outer space. *Technology Review*, 50-59.
- Gaffey, M. J., B. O'Leary, D. J. Ross, and R. Salkeld. 1977. Retrieval of asteroidal materials. *Proceedings of the NASA/Ames Summer Study on Space Settlements*, NASA Special Publication in press.
- Gaffey, M. J. 1978. Optical and spectral properties of the low albedo meteorites: Applications to the interpretation of the spectra of dark asteroids. *Lunar and Planetary Science IX* in press.
- Gaffey, M. J., E. F. Helin, and B. O'Leary. 1978. An assessment of near-earth asteroid resources. IN: *The 1977 NASA Ames summer study on space manufacturing*, submitted.
- A. I. Gavrishin, A. Coradini, M. Fulchignoni. "On the formulation of a new z^2 criterion." *Int. J. of Math. Geology* (In press).
- Helin, E. 1976. Observations of 1973 SA, 1973 WB, 1973 TA, 1975 VA and 1975 VB. *Minor Planet Circ.* No. 4027.
- Helin, E. F., S. J. Bus, and C. P. Pryor. 1976. Discovery of 1976 AA (Abstract). *Bull. Amer. Astron. Soc.* 8/3:458.
- Helin, E., S. J. Bus, J. Sanders, P. Bornmann, and W. Sebok. 1977. Observations of 1976 QA, 1976 QB, 1976 QD, 1976 SC, 1976 SD, 1977 CA. *Minor Planet Circ.* No. 4155.
- Helin, E., D. Matson, and T. Johnson. 1976. Ground-Based Telescopic Observations. IN: *A Geological Basis for the Exploration of the Planets*, p. 100-102.
- Helin, E., W. Sebok, S. J. Bus, T. Lauer, and D. Zelinsky. 1976. 1976 UA. *Internat. Astron. Circ.* No. 3001.
- Helin, E. F. and E. M. Shoemaker. 1976. 1976 AA: Discovery of a minor planet. *Astronomy* 4:12-13.
- Helin, E., S. J. Bus, P. Bornmann, T. Lauer. 1977. 1977 HA. *Internat. Astron. Circ.* No. 3063.
- Helin, E., S. J. Bus, P. Bornmann, T. Lauer, and D. Zelinsky. 1977. Observations of 1982, 1976 YB, 1977 CA, 1977 HA. *Minor Planet Circ.* No. 4193.
- Helin, E. and E. Shoemaker. 1977. Object Helin-Shoemaker. *Internat. Astron. Circ.* No. 3131.
- Helin, E. F. and E. M. Shoemaker. 1977. Discovery of 1976 AA. *Icarus* 31:415-419.

- Helin, E. F. and E. M. Shoemaker. 1977. 1976 UA; Second asteroid with orbit smaller than earth's (Abstract). Bull. Amer. Astron. Soc. 9:461.
- Helin, E., E. Shoemaker, S. J. Bus, and D. Zelinsky. 1977. 1977 VA. Internat. Astron. Circ. No. 3136.
- Helin, E., E. Shoemaker, and S. J. Bus. 1977. 1977 VA. Internat. Astron. Circ. No. 3137.
- Helin, E., E. Shoemaker, and D. Zelinsky. 1977. 1977 VA (Object Helin-Shoemaker). Internat. Astron. Circ. No. 3133.
- Helin, E. 1978. 1977 VA, Internat. Astron. Circ. No. 3158.
- Herbert, F., M. J. Wiskerchen, C. P. Sonett and J. K. Chao. 1976. Solar wind induction in Mercury: Constraints on the formation of a magnetosphere. Icarus 28/489.
- *Herbert, F., M. J. Drake, C. P. Sonett and M. J. Wiskerchen. 1977. Thermal history of lunar magma ocean (abstract). Lunar Science VIII, Lunar Science Institute, Houston, p. 424.
- *Herbert, F., M. J. Drake, C. P. Sonett and M. J. Wiskerchen. 1977. Some constraints on the thermal history of the lunar magma ocean. Proceedings 8th Lunar Science Conference, 1/573.
- Herbert, F., C. P. Sonett and M. J. Wiskerchen. 1977. Model "zero-age" lunar thermal profiles resulting from electrical induction. Journal of Geophysical Research 82/2054.
- Herbert, F. and C. P. Sonett. 1978. Primordial metamorphism of asteroids via electrical induction in a T-Tauri-like solar wind. Astrophysics and Space Science, special volume commemorating the 70th birthday of Hannes Alfvén, in press.
- Ip, W. H. 1976. On the early scattering processes of the outer planets. Paper presented at the IAU Colloquium No. 39, Relationships between Comets, Minor Planets, and Meteorites (Lyon, France).
- Ip, W. H. 1978. A note on the cosmogony of the asteroidal belt. Astrophysics and Space Science (in press).
- Ip, W. H. 1978. Model consideration of the bombardment event of the asteroidal belt by the planetesimals scattered from the Jupiter zone. Icarus (in press).
- Kobrick, M., "Interactions Between Protostars and the Solar Nebula," Presented at DPS Annual Meeting, Jan. 1977. Also BAAS, 9, No. 3, 453, 1977.

- Kowal, C., W. Sebok, E. Helin, T. Lauer, D. Zelinsky, and S. J. Bus. 1976. 1976 UA. *Internat. Astron. Circ.* No. 2999.
- King, E. A. 1976. Chondrule formation on Mercury. *Abstract in Lunar Science Institute Contribution No. 262*, 20.
- Lebofsky, L. A. 1978. Asteroid 1 Ceres: Evidence for water of hydration. *Monthly Notices of the Royal Astronomical Society* 182/2:17p-21p.
- Lebofsky, L. A., Veeder, G. J., Lebofsky, M. J. and Matson, D. L. 1978. Visual and radiometric photometry of 1580 Betulia. *Icarus*, in press.
- Marsden, B. G. 1977. Orbital data on the existence of Oort's cloud of comets. *IAU Colloquium* 39:75-86.
- Marsden, B. G., Z. Sekanina, and E. Everhart. 1978. New osculating orbits for 110 comets and analysis of original orbits for 200 comets. *Astronomical Journal* 83/1:64-71.
- Marsden, B. G. and E. Roemer. 1978. Comets in 1974. *Quarterly Journal of the Royal Astronomical Society* 19/2:in press.
- Marsden, B. G. and E. Roemer. 1978. Comets in 1975. *Quarterly Journal of the Royal Astronomical Society* 19/2:in press.
- Matson, D. L., F. P. Fanale, T. V. Johnson, and G. J. Veeder. 1976. Asteroids and Comparative Planetology. *Lunar Science Conference, 7th, Proceedings*: 3603-3627.
- McCord, T. B. 1978. Asteroid surface mineralogy: Evidence from Earth-based telescope observations. Prepared for NASA-sponsored Workshop on Asteroid Science, University of Chicago (to be incorporated in NASA-SP).
- McCord, T. B. 1978. Optical remote sensing of asteroid surfaces from spacecraft. Prepared for NASA-Sponsored Workshop on Asteroid Science, University of Chicago (to be incorporated in NASA-SP).
- McFadden, L., T. B. McCord, and C. Pieters. 1977. Vesta: The first pyroxene band from new spectroscopic measurements. *Icarus* 31/4: 439-446.
- Nagel, K., G. Neukum, H. Fechtig, and W. Gentner. 1976. Density and composition of interplanetary dust particles. *Earth Planet. Sci. Lett.* 30: 234-240.
- Peale, S. J. 1976. Orbital resonances in the solar system. Ann. Rev. Astron. Astrophys. 14: 215-246.

- Peale, S. J. 1976. Inferences from the dynamical history of Mercury's rotation. Icarus 28: 459-468.
- Peale, S. J. 1977. Consequences and inferences from tidal interactions in the solar system. Ann. Geophys. 33: 23-30.
- Peale, S. J. 1978. An observational test for the origin of the Titan-Hyperion orbital resonance. Submitted to Icarus.
- Sagan, C. and R. Isaacman. Dynamics of Planetary Accretion: Sensitivity to Initial Conditions, Icarus, 31, 510-533. Abstract published in "Reports of Planetary Geology Program, 1976-1977," NASA TM X-3511.
- Sebok, W. and S. J. Bus. 1976. Object Sebok. Internat. Astron. Circ. No. 3015.
- Sekanina, Z. 1976. Dust content and particle release experiments. IN: Proceedings of the Shuttle-Based Cometary Science Workshop (G. A. Gary and K. S. Clifton, eds.). Marshall Space Flight Center, 142-149.
- Sekanina, Z. 1976. Anomalous tails of comets. I. A review of past "edge-on" appearances. Center for Astrophysics, Preprint Series No. 445.
- Sekanina, Z. 1976. Anomalous tails of comets. II. Predictions for future returns of the short-period comets. Center for Astrophysics, Preprint Series No. 577.
- Sekanina, Z. 1977. Relative motions of fragments of the split comets. I. A new approach. Icarus 30/3:574-594.
- Sekanina, Z. 1977. On the "edge-on" configuration of the nuclei of Comet West (1975n). Astrophysical Letters 18/2:55-59.
- Sekanina, Z. 1977. Dust evolution from comets. Invited paper presented at the 19th Plenary meeting of COSPAR, Philadelphia, Pennsylvania, June 1976. IN: Space Research XVII (M. J. Rycroft and A. C. Strickland, eds.). Pergamon Press, 573-584.
- Sekanina, Z. 1977. Differential nongravitational forces in the motions of the split comets. IN: Comets, Asteroids, Meteorites: Interrelations, Evolution and Origins (A. H. Delsemme, ed.). Univ. of Toledo, 51-56.
- Sekanina, Z. 1977. Meteor streams in the making. IN: Comets, Asteroids, Meteorites: Interrelations, Evolution and Origins (A. H. Delsemme, ed.). Univ. of Toledo, 51-56.

- Sekanina, Z. 1977. Dust in cometary comas and tails (abstract). IN: Transactions of the International Astronomical Union XVIIIB (E. A. Müller and A. Jappel, eds.). D. Reidel Publ. Co., 135-136.
- Sekanina, Z. 1977. Splitting of Comet West (1975n) (abstract). Transactions of the International Astronomical Union XVIIIB (E. A. Müller and A. Jappel, eds.). D. Reidel Publ. Co., 140.
- Sekanina, Z. 1977. Orbits and photometric behavior of comets of large perihelion distance (abstract). Transactions of the International Astronomical Union XVIIIB (E. A. Müller and A. Jappel, eds.). D. Reidel Publ. Co., 164.
- Sekanina, Z. 1978. Relative motions of fragments of the split comets. II. Separation velocities and differential decelerations for extensively observed comets. *Icarus* 33/1:173-185.
- Sekanina, Z. and L. Pansecchi. 1977. The anti-tail of Comet Bradfield (1975p). *Astrophysical Letters* 18/2:61-63.
- Sekanina, Z. and H. E. Schuster. 1978. Meteoroids from Periodic Comet d'Arrest. Center for Astrophysics, Preprint Series No. 815; *Astronomy and Astrophysics*, in press.
- Sekanina, Z. and H. E. Schuster. 1978. Dust from Periodic Comet Encke: Large grains in short supply. Center for Astrophysics, Preprint Series No. 910; submitted to *Astronomy and Astrophysics*.
- Shoemaker, E. M. and E. F. Helin. 1977. Populations of planet-crossing asteroids and the relationship of Apollo objects to main-belt asteroids and comets. IN: *Comets, Asteroids, and Meteorites, the Interrelated Origins* (A. H. Delsemme, ed.). Univ. of Toledo Publications, 297-300.
- Shoemaker, E. M. and E. F. Helin. 1977. Present impact cratering rates on the terrestrial planets and the moon (Abstract). NASA TMX-3511, 74-77.
- Shoemaker, E. M. 1978. Search for near-earth asteroids. IN: *Summer workshop on near-earth resources* (J. R. Arnold and M. B. Duke, eds.). NASA Conf. Publication 2031, p. 57-61.
- Shoemaker, E. M. and E. F. Helin. 1978. Near-earth asteroids as targets for exploration. Abstract of 9th Annual Planetary Geology Principal Investigators Meeting, Tucson, Arizona. NASA publication in press.
- Shoemaker, E. M., E. F. Helin, and S. L. Gillett. 1978. Populations of planet-crossing asteroids. *Geologica Romana* in press.

- Shoemaker, E. M. and E. F. Helin. 1978. Earth-approaching asteroids: Populations, origin, and compositional types. IN: Report of Asteroid Workshop, Univ. of Chicago, Jan. 1978, NASA Conf. Publication in press.
- Shoemaker, E. M. and E. F. Helin. 1978. Earth-approaching asteroids as targets for exploration. IN: Report of Asteroid Workshop, Univ. of Chicago, Jan. 1978, NASA Conf. Publication in press.
- Shoemaker, E. M. and R. F. Wolfe. 1978. Chronology of Planetary Accretion - Evidence from the solar system. IN: IAU Colloquium No. 52, Protostars and Planets, Tucson, in press.
- Sulentic, J. W., S. J. Bus., J. G. Williams, and E. Helin. 1977. 1976 WA. Internat. Astron. Circ. No. 3071.
- Shoemaker, E. M. 1978. Why study impact craters? IN: Impact and Explosion Cratering; Planetary and Terrestrial Implications (D. J. Roddy, R. O. Peppin, and R. B. Merrill, eds.). Pergamon Press, 1-10.
- Shoemaker, E. M. 1978. Astronomically observable crater-forming projectiles. IN: Impact and Explosion Cratering; Planetary and Terrestrial Implications (D. J. Roddy, R. O. Peppin, and R. B. Merrill, eds.). Pergamon Press, 617-628.
- Shoemaker, E. M. and E. F. Helin. 1976. Systematic search for planet-crossing asteroids and the estimation of impact rates on the terrestrial planets (extended abstract). Reports of Accomplishments of Planetology Programs, 1975-1976, NASA Technical Memorandum X-3364 18-19.
- Shoemaker, E. M. and E. F. Helin. 1976. An empirical test of Opik's equation for probabilities of collision of small bodies with the planets (Abstract). Bull. Amer. Astron. Soc. 8/3:433.
- Smith, E. J. and C. P. Sonett. 1976. Extraterrestrial magnetic fields: Achievements and opportunities. IEEE Trans., GE/14:154.
- Smoluchowski, R. 1976. Recent planetary physics and chemistry. Proceedings Conference on Astrophysics and Physics of Space, ICTP, Trieste, September 1976.
- Smoluchowski, R. 1977. Ice grains in space in "Comets, Asteroids and Meteorites" Ed. A. H. Delsemme, U. of Toledo Press, Toledo, Ohio.
- Smoluchowski, R. 1977. The post pioneer Jupiter, COSPAR Space Research, 17, 673.

- Smoluchowski, R. 1977. Superoxides and liquid water on Mars, Abstracts of the PGPI Meeting, St. Louis, May 1977.
- Smoluchowski, R. 1977. Ice on Saturn's rings and satellites, Bulletin American Astronomical Society 9, 523.
- Smoluchowski, R. 1977. Magnetism field of Saturn, Bulletin American Astronomical Society 9, 542.
- Smoluchowski, R. 1978. Amorphous ice on Saturnian rings: its formation, stability and observability. (submitted to Science).
- Sonett, C. P. 1977. Some consequences of solar wind induction in the Moon. Phil. Trans. Roy. Soc. 285/537.
- Sonett, C. P. and F. Herbert. 1977. Pre-main sequence heating of planetoids. IN: Relationships Between Comets, Minor Planets, and Meteorites (Proc. IAU Colloq. 39) in press.
- Sonett, C. P. and M. J. Wiskerchen. 1977. A new source of lunar electromagnetic induction: Forcing by the diamagnetic cavity. Geophysical Research Letters 4/307.
- Sonett, C. P. 1978. Evidence for a primordial magnetic field during the meteorite parent body era. Geophysical Research Letters 5.
- Whipple, F. L. 1976. A speculation about comets and the earth. Center for Astrophysics Preprint Series No. 370. In Mem. Soc. Roy. Sci. Liege, Ser. 6, vol. IX, 101-111.
- Whipple, F. L. 1976. Sources of interplanetary dust. Center for Astrophysics Preprint Series No. 375. In Proceedings IAU Colloquium No. 31, Interplanetary Dust and Zodiacal Light (H. Elsässer and H. Fechtig, eds.). 403-415.
- Whipple, F. L. and W. F. Heubner. 1976. Physical process in comets. Center for Astrophysics Preprint Series No. 413. Ann Rev. Astron. and Astrophys., vol. 14, 143-172.
- Whipple, F. L. 1976. The nucleus: Comments. In The Study of Comets, NASA SP-393 (B. Donn, M. Mumma, W. Jackson, M. A'Hearn and R. Harrington, eds.). 622-635.
- Whipple, F. L. and M. Lecar. 1976. In The Study of Comets, NASA SP-393 (B. Donn, M. Mumma, W. Jackson, M. A'Hearn and R. Harrington, eds.). 660.
- Whipple, F. L. 1976. Comet Kohoutek in retrospect. Center for Astrophysics Preprint Series No. 408. Amer. Phil. Soc., vol. 120, 1-6.

- Whipple, F. L. 1976. Background of modern comet theory. *Nature*, vol. 263, no. 5572, 15-19.
- Whipple, F. L. 1977. The constitution of cometary nuclei. Center for Astrophysics Preprint Series No. 637. In *Comets-Asteroids-Meteorites* (A. H. Delsemme, ed.). The University of Toledo, 25-35.
- Whipple, F. L. 1977. The status of cometary science. In *Proc. of the Shuttle-Based Cometary Workshop* (G. Allen Gary and K. Stuart Clifton, eds.). NASA George C. Marshall Space Flight Center. 169-190.
- Whipple, F. L. 1977. The reality of comet groups and pairs. Center for Astrophysics Preprint Series No. 517. *Icarus*, vol. 30, 736.
- Whipple, F. L. 1977. Cometary Brightness Variation and Nucleus Structure. Center for Astrophysics Preprint Series No. 814. *Astrophysics and Space Science* in press.
- Whipple, F. L. 1977. Rotation and outbursts of Comet P/Schwassmann-Wachmann 1. *Bull. Amer. Ast. Soc.*, vol. 9, 563. (abstract).
- Whipple, F. L. 1978. The significance of cometary nuclei. *Proceedings IAU Commission 15* in press.
- Whipple, F. L. 1978. The earth as a part of the universe. *Annual Review of Earth and Planetary Sciences*, vol. 6 in press.
- Whipple, F. L. 1978. The rotation period of comet Donati. Center for Astrophysics Preprint Series No. 894. *Nature (Letter)* in press.
- Whipple, F. L. 1978. On the nature and origin of comets and their contribution to planets. Center for Astrophysics Preprint Series No. 907. *Protostars and Planets*, University of Arizona in press.
- Whipple, F. L. 1978. Comets. First chapter of *Cosmic Dust* (J. A. M. McDonnell, ed.). Wiley.

PLANETARY SATELLITES

- Cintala, M. J., Head, J. W. and Veverka, J. (1978) Characteristics of the cratering process on small bodies: Phobos and Deimos: Lunar Science IX.
- Duxbury, T. C. (1977) Phobos and Deimos Geodesy. In Planetary Satellites, Ed. J. Burns, pp. 346-362. University of Arizona Press, Tucson.
- Duxbury, T. C. and Veverka, J. (1977) Viking Imaging of Phobos and Deimos: An Overview of the Primary Mission. J. of Geophysical Research, 82, No. 28, 4203-4211.
- Duxbury, T. C. and Veverka, J. (1978) Deimos Encounter by Viking. Science, In press.
- Duxbury, T. C. (1978) Spacecraft Imaging of Phobos and Deimos. Vistas in Astronomy, In press.
- Duxbury, T. C. (1978) Phobos Transit of Mars as Viewed by Viking. Science, In press.
- Gougin, J., Veverka, J. and Duxbury, T. C. (1978) Phobos Illuminated by Marshine. Icarus, In press.
- Lebofsky, L. A. and Fegley, M. B., Jr. 1976. Chemical composition of icy satellites and Saturn's rings. Icarus 28/3:379-387.
- Lebofsky, L. A., Cutts, J. A., and Veeder, G. J. 1977. Galilean satellites: Anomalous temperatures disputed. Science 195:191-192.
- Lebofsky, L. A. 1977. Identification of water frost on Callisto. Nature 269:785-787.
- Nash, D. B. and F. P. Fanale. 1977. Io's Surface Composition Based on Reflectance Spectra of Sulfur/Salt Mixtures and Proton-Irradiation Experiments. Icarus 31:40-80.
- R. Nelson and B. Hapke. 1978. Spectral Reflectivities of the Galilean Satellites and Titan, 0.32-0.86 Micrometers. Submitted to Icarus.
- R. Nelson and B. Hapke. 1978. Possible Correlation of Io's Post-Eclipse Brightening with Major Solar Flares. Icarus, 33, 203-209.
- Pang, K. D., J. B. Pollack, J. Veverka, A. L. Lane, and J. M. Ajello. 1978. The Composition of Phobos: Evidence for Carbonaceous Chondrite Surface from Spectral Analysis. Science 199/4324:64-66.
- Pollack, J. B., et al. 1978. Multicolor Observations of Phobos with the Viking Lander Cameras: Evidence for a Carbonaceous Chondritic Composition. Science 199/4324:66-69.

- Peale, S. J. 1977. Rotation histories of the natural satellites, IN: Planetary Satellites, J. Burns, Ed., Univ. of Arizona Press, Tucson, Arizona.
- Thomas, P., Veverka, J. and Duxbury, T. C. (1978) The Origin of the Grooves on Phobos. Nature, In Press.
- Tolson, R. H., Duxbury, T. C., et al. (1978) Viking First Encounter of Phobos: Preliminary Results. Science, 199, No. 64, 61-64.
- Veverka, J. and Duxbury, T. C. (1977) Viking Observations of Phobos and Deimos: Preliminary Results. J. of Geophysical Research, 82, No. 28, 4213-4223.

PLANETARY INTERIORS

- Anderson, D. L., et al. 1976. The Viking seismic experiment. *Science* 194:1318-1321.
- Anderson, D. L., et al. 1977. Seismology on Mars. *Journal of Geophysical Research* 82/28:4524-4546.
- Cassen, P., R. E. Young, G. Schubert and R. T. Reynolds. 1976. Implications of an internal dynamo for the thermal history of Mercury. *Icarus* 28: 501-508.
- Hsui, A. T. and M. N. Toksöz. 1977. Thermal evolution of planetary size bodies. *Proceedings of the Eighth Lunar Science Conference*, Houston, Texas.
- Johnston, D. H. and M. N. Toksöz. 1977. Internal structure and properties of Mars. *Icarus* 32:73-84.
- Okal, E. A. and D. L. Anderson. 1978. Theoretical models for Mars and their seismic properties. *Icarus*, in press.
- Peale, S. J. 1976. Does Mercury have a molten core? *Nature* 262: 765-766.
- Peale, S. J. and A. P. Boss. 1977. A spin-orbit constraint on the viscosity of a Mercurian liquid core. *Journ. Geophys. Res.* 82: 743-749
- Peale, S. J. and A. P. Boss. 1977. Mercury's core: The effect of viscosity on the spin-orbit constraints. *Journ. Geophys. Res.* 82: 3423-3429.
- Peale, S. J. and P. Cassen. 1978. Contribution of tidal dissipation to lunar thermal history. Submitted to *Icarus*.
- Phillips, R. J. 1978. Planetary interiors: Gravity and tectonics. IN: *Lunar Sci. IX, (suppl.)*. The Lunar and Planetary Institute, Houston.
- Phillips, R. J., R. S. Saunders, and W. B. Banerdt 1978. Martian stress distributions: Evidence against the finite strength support of Tharsis. *J. Geophys. Res.* in press.
- Phillips, R. J. and W. L. Sjogren 1978. Gravity constraints on martian lithospheric thickness (abs.). *EOS* 59.
- Phillips, R. J. and M. Tiernan 1977. Martian stress distribution arguments against the static support of Tharsis (abs.). *EOS* 58:426.
- Schaber, G. G., and J. M. Boyce. 1977. The rigid, hard crusts of the Moon, Mars, Mercury and Venus: Implications for the role of water in crustal mobility of the Earth. IN: *Reports of Planetary Geology Program, 1976-1977*. NASA TMX-3511.

- Schaber, G. G., J. M. Boyce, and N. J. Trask. 1977. Moon-Mercury: Large impact structures, isostasy and average crustal viscosity. *Physics of the Earth and Planetary Interiors* 15:189-201.
- Schaber, G. G., and J. M. Boyce. 1977. The rigid hard crusts of the Moon, Mars, Mercury and Venus: Implications for the role of water in crustal mobility of Earth. IN: *Reports of Planetary Geology Program, 1976-1977*. NASA TMX-3511.
- Schubert, G. and R. E. Young. 1976. Cooling the Earth by whole mantle subsolidus convection: A constraint on the viscosity of the lower mantle. *Tectonophysics* 35: 201-214.
- Schubert, G., R. E. Young and P. Cassen. 1977. Solid state convection models of the lunar internal temperature. *Philosophical Transactions of the Royal Society London A* 285: 523-536.
- Sjogren, W. L. with R. J. Phillips et al. 1976. Gravity Fields, *IEEE Trans. Geosci. Electronics*, GE-14: 172.
- Sleep, N. H. and R. J. Phillips 1978. Isostatic compensation of the Tharsis region, Mars. Submitted to *J. Geophys. Res.*
- Smoluchowski, R. 1976. Interior of the giant planets. *Proceedings 16th Assembly of the IAU, Grenoble, France*.
- Solomon, S. C., 1977. The relationship between crustal tectonics and internal evolution in the Moon and Mercury. *Physics of the Earth and Planetary Interiors* 15/2-3:135-145.
- Solomon, S. C., 1977. Put up or shut up: what do we really know about terrestrial planetary interiors? (abstract). *Bulletin of the American Astronomical Society* 9/4:542.
- Solomon, S. C., 1978. Formation, history and energetics of cores in the terrestrial planets. Submitted to *Physics of the Earth and Planetary Interiors*.
- Solomon, S. C., 1978. On volcanism and thermal tectonics on one-plate planets. Submitted to *Geophysical Research Letters*.
- Solomon, S. C., 1978. Volcanism and crustal tectonics as consequences of thermal history for the terrestrial planets (abstract). *EOS, Transactions of the American Geophysical Union*, in press.
- Solomon, S. C. and J. W. Head, 1978. Vertical movement in mare basins: relation to mare emplacement, basin tectonics, and lunar thermal history (abstract). *Lunar and Planetary Science IX, The Lunar Science Institute, Houston, Texas*, in press.

- Toksöz, M. N. and D. H. Johnston. 1977. The evolution of the moon and the terrestrial planets. IN: The Soviet-American Conference on Cosmochemistry of the Moon and Planets (J. H. Pomeroy and N. J. Hubbard, eds.). NASA Special Publication SP-370, Part 1, 295-327.
- Toksöz, M. N. and A. T. Hsui. 1978. Thermal history and evolution of Mars. *Icarus* in press.
- Toksöz, M. N., A. T. Hsui and D. H. Johnston. 1978. Thermal evolutions of the terrestrial planets. The Moon (Alfvén volume) in press.
- *Wiskerchen, M. J. and C. P. Sonett. 1977. A lunar metal core? Proceedings 8th Lunar Science Conference 1/515. Abstract in Lunar Science VIII, Lunar Science Institute, Houston, p. 1020.
- *Wiskerchen, M. J. and C. P. Sonett. 1978. A lunar core and other matters: Fine tuning of lunar electromagnetic gain. Lunar Science IX, Lunar Science Institute, Houston.

**GEOLOGICAL AND GEOCHEMICAL
CONSTRAINTS ON PLANETARY EVOLUTION**

- Adams, J. B., T. B. McCord, and R. L. Huguenin. "Multiband Photometry in the Visible and Near-Infrared" in A Geological Basis for the Exploration of the Planets, NASA-SP (1976).
- Adams, J. B., T. B. McCord, and R. L. Huguenin. 1976. Multiband photometry in the visible and near-infrared. IN: A geological Basis for the Exploration of the Planets, NASA SP-417, 52-55.
- Arvidson, R. 1977. The Exploration of Mars. Washington University Magazine, 18-23.
- Arvidson, R. 1977. Rocks and soils at the Viking Landing sites. Abstracts of the Annual meeting of the American Geophysical Union, Washington, D.C.
- Arvidson, R. 1978. The planet Mars. LeRecherche, in press.
- Arvidson, R., A. Binder, K. Jones. 1978. The Surface of Mars. Scientific American, March issue, in press.
- Arvidson, R. and S. Bragg. 1977. Spectrophotometry of Mars by way of the Viking Lander Cameras. IN: NASA TM-X-3511 Reports of Planetary Geology program 1976-1977, 204-206.
- Arvidson, R., K. Goettel, C. Hohenberg. 1978. The Geology of Mars. Reviews of Geophysics and Space Physics, in press.
- Baird, A. K., P. Toulmin III, B. C. Clark, H. J. Rose, K. Keil, R. P. Christian, and J. L. Gooding. 1976. Mineralogic and petrologic implications of Viking geochemical results from Mars: Interim report. Science 194:1288-1293.
- Barnes, Virgil E. and James R. Underwood, Jr., 1976. New investigations of the strewn field of Libyan desert glass and its petrography. Earth and Planetary Science Letters, 1/1: 117-122.
- Binder, A. B., Arvidson, R. E., Guinness, E. A., Jones, K. L., Morris, E. C., Mutch, T. A., Pieri, D. C., and Sagan, C. (1977) The geology of the Viking lander 1 site: Journal of Geophysical Research, 82:28, 4431.
- Blasius, K. R., J. A. Cutts, H. Masursky, M. Carr, R. Greeley and J. E. Guest, 1976. Viking orbiter observations of the Valles Marineris, the great martian equatorial troughs. Abstracts Div. Planet. Science.
- Blasius, K. R., J. A. Cutts, J. E. Guest, and H. Masurky. 1977. Geology of the Vallis Marineris: First analysis of imaging from the Viking 1 Orbiter Primary Mission, Journal of Geophysical Research, vol. 82, 4067-4091.

- Blasius, K. R., J. A. Cutts, J. E. Guest and H. Masursky. 1977. Geology of the Valles Marineris: First Analysis of Imaging From the Viking 1 Orbiter Primary Mission. *Journal of Geophysical Research* 82/28: 4067-4092.
- Bragg, S. 1977. Martian Soil at the Viking Lander 1 site: Reflectance properties, magnetic properties, and dust accumulation on the lander. Master's Thesis, Washington University.
- Carr, M. H. 1977. A reassessment of the geologic history of Mars as a result of Viking Orbiter pictures. *Proceedings Twentieth Annual COSPAR Meeting, Tel Aviv.*
- Carr, M. H. 1977. A reassessment of the geologic history of Mars as a result of Viking orbiter pictures. *Proceedings XXth Annual COSPAR Meeting, Tel Aviv, p. 116.*
- Carr, M. H. 1978. Planetary exploration and understanding the Earth. *U.S. Geological Survey Annual Report, Fiscal Year 1977.*
- Carr, M. H., Baum, W. A., Blasius, K. R., Briggs, G. A., Cutts, J. A., Duxbury, T., Greeley, R., Guest, J. E., Masursky, H., Smith, B. A., Soderblom, L. A., Veverka, J., and Wellman, J. B. 1976. Preliminary results from the Viking Orbiter Imaging experiment. *Science* 193: 766-776.
- Carr, M. H., H. Masursky, W. A. Baum, K. R. Blasius, G. A. Briggs, J. A. Cutts, R. Greeley, J. E. Guest, B. A. Smith, L. A. Soderblom, J. Ververka, and J. B. Wellman. 1976. Preliminary results from the Viking Orbiter imaging experiment. *Science, Vol. 193, 766-776.*
- Cassen, P., R. E. Young and G. Schubert. 1978. The distortion of the Moon due to convection. *Geophysical Research Letters, in press.*
- Chiang, Erick, 1977, Structure of an ice stalagmite from Crystal Ice Cave, Idaho, in: Greeley, Ronald and John S. King, eds: *Volcanism of the Eastern Snake River Plain, A Comparative Planetary Geology Guidebook, p. 165-169*
- M. Coradini, R. E. Atvidson. "Age and formation of Martian fretted terrain." *Geologica Romana, XV; pag. 377 - 1976.*
- M. Coradini, R. Bianchi. "The contact between plains and cratered terrain on Mars: a geomorphologic analysis." *Geologica Romana, XV, pag. 383 - 1976.*
- M. Coradini, M. Fulchignoni. "La luna e i pianeti di tipo terrestre." *Giornale di Astronomia - Vol. 2 No. 3, pag. 257 - 1976.*

- A. Coradini, M. Fulchignoni, A. I. Gavrishin. "Classification of lunar rocks and glasses by a new statistical technique." *The Moon*, vol. 16, pag. 175 - 1976.
- A. Coradini, A. I. Gavrishin, M. Fulchignoni. "Statistical techniques applied to lunar geochemical data." Expanded abstracts of Seventh Lunar Science Conf., LSI pag. 172 - 1976.
- A. Coradini, M. Salomone. "Uses of principal components models in planetary Geology." *Geologica Romana*, XV., pag. 347 - 1976.
- Cordell, B. M. 1977. Global tectonics of Mercury and the Moon. *Phys. Earth Planet. Interiors*, 15, 146-155.
- Cordell, B. M. 1977. Tectonism and the interior of Mercury. Ph.D. Thesis, Univ. Arizona.
- Cutts, J. 1977. The Polar Regions of Mars. *Astronomy* 5/10:10-17.
- Cutts, J. A., and K. R. Blasius. 1977. The Origin of Rilles Between Lunae Planum and Chryse Planitia, Mars. Accepted for publication in *Icarus*.
- Cutts, J. A., et al., including Carr, M. H. 1977. North Polar region of Mars: Imaging results from Viking II. Proceedings 8th Annual Meeting, Division of Planetary Science, American Astronomy Society, p. 1.
- Cutts, J. A., K. R. Blasius, G. A. Briggs, M. H. Carr, H. Masursky, and R. Greeley, 1976. The North Polar Region of Mars: Imaging results from Viking II. *Science*, Vol. 194, pp. 1329-1337.
- D'Alli, R. E. (1977) The significance of bright spots observed during the 1971 martian dust storm: *Icarus*, 31, 146-156.
- Dzurisin, D. and H. J. Melosh. 1976. Crustal tectonics of a despun planet. Abstracts of the Fall Annual Meeting of the AGU, San Francisco.
- Dzurisin, D. 1977. Early crustal evolution of the planet Mercury. Abstracts of the Proceedings of the Joint Assemblies of Seismology and Physics of the Earth's Interior, and Volcanology and Chemistry of the Earth's Interior, Durham, England.
- Dzurisin, D. 1977. Topical studies of the planet Mercury. Ph.D. thesis, Division of Geological and Planetary Sciences, California Institute of Technology, Pasadena, California.
- Dzurisin, D. 1977. Mercurian bright patches: Evidence for chemical alteration of surface material? *Geophysical Research Letters* 4/10: 383-396.

- Dzurisin, D. 1978. Tectonic and volcanic chronology of Mercury as inferred from studies of scarps, ridges, troughs, and other lineaments. Submitted to Journal of Geophysical Research.
- Elachi, C., M. L. Bryan, and W. F. Weeks. 1976. Imaging Radar Observations of Frozen Arctic Lakes. Remote Sensing of Environment 5/3: 169-175.
- Fanale, F. P. 1976. Planetary Volatiles. IN: A Geological Basis for the Exploration of the Planets, p. 41-45. NASA SP-417.
- Fanale, F. P. 1976. Space Exploration and the History of Solar-System Volatiles. IEEE Transactions on Geoscience Electronics GE-14/3:183-198
- Fanale, F. P. 1977. Volatile Evolution. IN: Reports of Planetary Geology Program 1976-1977, p. 183-186. NASA TM-X-3511.
- Fanale, F. P., T. V. Johnson, and D. L. Matson. 1977. Io's Surface Composition: Observational Constraints and Theoretical Considerations. Geophysical Research Letters 4/8:303-306.
- Fanale, F. P. and W. A. Cannon, 1978, Mars: The Role of the Regolith in Determining Atmospheric Pressure and the Atmosphere's Response to Insolation Changes, J. Geophys. Res., in press.
- Fanale, F. P., W. A. Cannon, and T. Owen. 1978. Mars: Regolith Adsorption and the Relative Concentrations of Atmospheric Rare Gases. Geophysical Research Letters 5/1:77-80.
- M. Fulchignoni, M. Coradini. "Marte visto dai Viking." Le Scienze, n.100 vol.XVII - 1977.
- Fjeldbo, G., A. Kliore, D. Sweetnam, P. Esposito, B. Seidel and H. T. Howard. 1976. The Occultation of Mariner 10 by Mercury. Icarus 29:439-444.
- Gault, D. E., J. A. Burns, P. Cassen, R. G. Strom 1977. Mercury. Annual Review of Astronomy and Astrophysics. 15, 97-126.
- A. I. Gavrishin, A. Coradini, M. Fulchignoni. "Evaluation of quality of lunar samples chemical composition." Novocercassk Politechnic. Inst. Publ., pag. 102 (In russian) 1976.
- Goettel, K. 1977. Abundances of K, U, Th in the terrestrial planets. Transactions, 53:430.
- Goettel, K. 1977. Composition of the terrestrial planets. IN: NASA TM-X-3511 Reports of Planetary Geology Program 1976-1977, 7-10.

- Goettel, K. and Barshay, S. 1978. The chemical equilibrium model for condensation in the solar nebula: Assumptions, implications, and limitations. IN: S. Dermott (ed.) The Origin of the Solar System, in press.
- Goldstein, R. M., R. R. Green, and H. Rumsey, Jr. 1976. Venus Radar Images. Journal of Geophysical Research 81/26:4807-4817.
- Goldstein, R., R. Green, H. Rumsey, M. Malin, and R. S. Saunders. 1977. The Surface of Venus. (Abstract). Bull. Am. Astro. Soc. 9(3), 466-467.
- Gölböck, Matthew P., and McGill, George E., 1977, Straight and arcuate lunar rilles as indicators of shallow crustal structure: Trans. American Geophys. Union, 58, 1180 (abs.).
- Greeley, R., 1976. Gradation as a planetary process in Primer of Planetary Geology, NASA-Ames Res. Center.
- Greeley, R., and M. Carr, eds., 1976. A Geological Basis for the Exploration of the Planets. NASA SP417, 109 p.
- Greeley, R., E. Theilig, J. E. Guest, M. H. Carr, H. Masursky and J. A. Cutts. 1977. Geology of Chryse Planitia. Journal of Geophysical Research 82/28:4093-4110.
- Guest, J. E., and R. Greeley, 1976. Geology on the Moon. Wykeham Science Series, Taylor and Francis, Ltd., London.
- Guest, J. E., P. S. Butterworth and R. Greeley, 1977. Geological Observations in the Cydonia region of Mars from Viking. Journal of Geophysical Research, Vol. 82, 4111-4120.
- Guest, J. E. and W. P. O'Donnell, 1977. Surface history of Mercury: A review. Vistas in Astronomy. Vol. 20, 273-300.
- B. Hapke. 1976. Photometry of Venus from Mariner 10. J. Atmosph. Sci., 33, 1803-1815.
- B. Hapke. 1977. Interpretations of Optical Observations of Mercury and the Moon. Phys. Earth Planet. Interiors, 15, 264-274.
- Head, J. W. (1977) Origin of central peaks and peak rings: Evidence from peak-ring basins on Moon, Mars, and Mercury: EOS, 58, 424.
- Head, J. W. (ed.) (1977) Significant Achievements in the Planetary Geology Program - 1975-1976: NASA Contractor Report, NASA CR-2827, 32 pp.

- Head, J. W., Wood, C. A., and Mutch, T. A. (1977) Geologic evolution of the terrestrial planets: American Scientist, 65, 21-29.
- Hodges, C. A., and H. J. Moore. 1978. Tablemountains of Mars. Lunar and Planetary Science IX - Abstracts, Lunar Science Institute, Houston, Texas, in press.
- Huck, F. O., D. J. Jobson, S. K. Park, S. D. Wall, R. E. Arvidson, W. R. Patterson, and W. D. Benton. 1977. Spectrophotometric and Color Estimates of the Viking Lander Sites. Journal of Geophysical Research 82/28:4401-4411.
- Hunter, D. M., McGill, G. E., and Nagy, A. F., 1977, Current knowledge of Venus: Space Sci. Rev., 20, 265-282.
- Huguenin, R. L. 1976. Photochemical weathering and the Viking biology experiments on Mars. Proceedings of the NASA Colloquium on Water in Planetary Regoliths, 100-106.
- Huguenin, R. L. (1976). "Surface Oxidation: A Major Sink for Water on Mars," Science, 192, 138.
- Huguenin, R. L. (1976). "Mars: Chemical Weathering as a Massive Volatile Sink," Icarus, 28, 203.
- Huguenin, R. L. (1976). "Chemical Evolution of the Martian Atmosphere by Surface Weathering," Proc. Colloquium on Water in Planetary Regoliths, Hanover, New Hampshire, 40.
- Huguenin, R. L., Adams, J. and McCord, T. (1977). "Mars: Surface Mineralogy from Reflectance Spectra," Lunar Science, 8, 478.
- Huguenin, R. L., Adams, J. B. and McCord, T. B. (1977). "Mars: Surface Mineralogy from Reflectance Spectra," in Reports of Planetary Geology Program, 1976-1977, NASA TMX-3511, 201.
- Huguenin, R. L., R. G. Prinn, and M. Maderazzo. 1977. Mars: Photodesorption from mineral surfaces and its effects on atmospheric stability. Icarus 32/3:270-298.
- Huguenin, R. L. (1978). "Viking Soil: Chemical Activity from Surface Frosts?" Lunar and Planetary Science, 9, 564.
- Huguenin, R. L., J. B. Adams, and T. B. McCord. 1978. "Mars: Near-Infrared Spectral Reflectance and Compositional Implication," Icarus (in press).
- Huguenin, R. L., J. B. Adams, and T. B. McCord. 1978. Mars: Surface mineralogy from reflectance spectra. Lunar and Planetary Science VIII, 478-480. Lunar Science Institute, Houston.

- Huguenin, R. L., J. W. Head III, and T. R. McGetchin. 1978. "Mars: Petrologic Units in the Margaritifer Sinus and Coprates Quadrangles," in Reports of Planetary Geology Program, 1977-1978, NASA TMX (in press).
- Kaula, W. M., M. C. Malin, H. Masursky, G. Pettengill, R. Prinn, and R. E. Young. 1977. Appendix B - Venus. IN: Terrestrial Bodies Science Working Group. NASA Special Publication in press.
- Keil, K., Clark, B. C., Baird, A. K., Toulmin, P. III, and Rose, H. J., Jr., 1978, Zur Chemie der Marsoberfläche - mineralogische und petrologische Implikationen: Naturwissenschaften, in press.
- Kieffer, H. H., S. C. Chase, Jr., E. D. Miner, F. D. Palluconi, G. Munch, G. Neugebauer, and T. Z. Martin. 1976. Infrared Thermal Mapping of the Martian Surface and Atmosphere: First Results. Science 193/4255: 780-786.
- Kieffer, H. H., S. C. Chase, Jr., T. Z. Martin, E. D. Miner, and F. D. Palluconi. 1976. Martian North Pole Summer Temperatures: Dirty Water Ice. Science 194:1341-1344.
- Kieffer, H. H., P. R. Christensen, T. Z. Martin, E. D. Miner, and F. D. Palluconi. 1976. Temperatures of the Martian Surface and Atmosphere: Viking Observation of Diurnal and Geometric Variations. Science 194:1346-1351.
- Kieffer, H. H., T. Z. Martin, A. R. Peterfreund, B. M. Jakosky, E. D. Miner, and F. D. Palluconi. 1977. Thermal and Albedo Mapping of Mars During the Viking Primary Mission. Journal of Geophysical Research 82/28:4249-4291.
- King, E. A. 1976. Space Geology: An Introduction. John Wiley & Sons, New York, 349 p.
- King, E. A. 1977. The lunar regolith: Physical characteristics and dynamics. Philosophical Transactions of The Royal Society, London, Series A, 285, 273-278.
- King, E. A. 1977. Geologic importance of impact melt-rocks. Naturwissenschaften, 64, 379.
- King, E. A. 1978. Review of The Moon Book: Exploring the Mysteries of the Lunar World by Bevan French. EOS, Transactions of the American Geophysical Union, in press.
- King, E. A. and J. C. Butler. 1978. Rosin's Law and the lunar regolith. The Moon, 17, 177-178.

- Lebofsky, L. A. and J. E. Conel. 1977. Planetary Frost Program. IN: Reports of Planetary Geology Program 1976-1977, p. 276-277. NASA TM-X-3511.
- Lucchitta, B. K. 1977. Landslides on Mars. Geological Society of America Annual Meeting, Abstracts with Programs 9/7:1077.
- Lucchitta, B. K. 1977. A large landslide on Mars. IN: Reports of Planetary Geology Program, 1976-1977. NASA TMX-3511.
- Lucchitta, B. K. 1977. Morphology of Chasma Walls, Mars. U.S. Geological Survey Interagency Report - Astrogeology 83, Open-file report 77-678, and U.S. Geological Survey, Journal of Research in press.
- Lucchitta, B. K. 1978. Landslides in the Valles Marineris, Mars. NASA TMX in press.
- Lucchitta, B. K. 1978. A large landslide on Mars. Geological Society of America Bulletin in press.
- Malin, M. C. 1976. Observations of Intercrater Plains on Mercury. Geophys. Res. Lett., 3, 581-584.
- Malin, M. C. 1977. Intercrater plains and the early history of Mars. (Abstract). Bull. Am. Astro. Soc. 9(3), 448.
- Malin, M. C. 1977. Processes of modification of ancient surfaces on Mars, Mercury and the Moon. (Abstract). Abstracts of the IAVCEI/IASPEI Assembly, Durham, England, August 7-19, 1977.
- Malin, M. C. and M. J. Abrams. 1977. Remote sensing studies of Icelandic volcanic features. (Abstract). Abstracts of the Planetary Geology Field Conference on Volcanic Plains, Pocatello, Idaho, October 12-15, 1977.
- Malin, M. C. 1977. Early evolution of planetary surfaces. (Abstract). Lunar Science VIII, 611-612.
- Malin, M. C. 1977. Ancient surfaces of the terrestrial planets. (Abstract). Reports of Planetary Geology Program 1976-1977. NASA TM X-3511, 42-43.
- Malin, M. C. and R. S. Saunders. 1977. Surface of Venus: Evidence of Diverse Landforms from Radar Observations. Science 196, 987-990.
- Malin, M. C., D. Evans, and C. Elachi. 1978. Imaging Radar Observations of Askja Caldera, Iceland (submitted to Geophys. Res. Lett.).
- Mason, R., J. E. Guest and G. N. Cooke. 1976. An Imbrium pattern of graben on the Moon. Proc. Geol. Assoc. London, Vol. 87, 161-168.

- Masson, Ph. 1976. Structure pattern analysis of the Noctis Labyrinthus - Valles Marineris regions of Mars. In: Proceedings of the International Colloquium of Planetary Geology, Rome, September 22-30, 1975. Estratto da Geologica Romana, Vol. XV, p. 399-406.
- Masson, Ph. and Thomas, P. 1977. Preliminary results of structural lineament pattern analysis of Mercury. In: Reports of Planetary Geology Program, 1976-1977. NASA TM X-3511, p. 54-55.
- Masson, Ph. 1977. Structure pattern analysis of the Noctis Labyrinthus - Valles Marineris regions of Mars. Icarus 30, 49-62.
- Masursky, Harold. 1976. Terrestrial planetary crusts - evolution and modification. Colloquium on Comparative Planetology, University of Maryland, College Park, Md.
- Masursky, H., K. Blasius, M. Carr, J. Cutts, R. Greeley, and J. Guest, 1976. The geologic evolution of Mars - A Preliminary Viking View. Abstracts, Div. Planet. Sci.
- Masursky, Harold, M. E. Strobell, and A. L. Dial. 1976. Geologic map of the Chryse region of Mars, scale 1:1,000,000. Open file report.
- Masursky, Harold. 1977. Comparative planetology--ideas and methodology their application to terrestrial geologic processes. Proceedings of Symposia on Remote Sensing of Environment, Environmental Research Institute of Michigan, oral presentation.
- Masursky, Harold, A. L. Dial, and M. E. Strobell. 1977. Venus Mapping. IN: Reports of Planetary Geology Program, 1976-1977. NASA TMX-3511.
- Masursky, H., W. M. Kaula, G. E. McGill, G. H. Pettengill, R. J. Phillips, C. T. Russell, G. Schubert and I. I. Shapiro. 1977. The surface and interior of Venus. Space Science Reviews 20: 431-449.
- Masursky, Harold, G. G. Schaber, C. Elachi, M. E. Strobell, and A. L. Dial. 1977. Selection of Viking landing sites based on Viking and Mariner 9 images and ground based radar data. IN: Reports of Planetary Geology, 1976-1977. NASA TMX-3511.
- Masursky, Harold, M. E. Strobell, and A. L. Dial. 1977. Venus mapping. IN: Reports of Planetary Geology Program, 1976-1977. NASA TMX-3511.
- McCauley, John F., John E. Guest, Newell J. Trask, Gerald G. Schaber, Ronald Greeley, Donald E. Gault, and Henry E. Holt. 1978. The stratigraphy of the Caloris Basin. NASA TMX in press.
- McCauley, J. F., J. E. Guest, N. J. Trask, G. G. Schaber, R. Greeley, D. Gault, and H. E. Holt. 1978. Stratigraphy of the Caloris Basin, Mercury. Journal of Research Geological Survey in press.

- McCord, T. B. 1976. The George R. Wallace, Jr. Astrophysical Observatory. Bulletin American Astronomical Society 8/1:267-268.
- McCord, T. B. 1976. Multispectral mapping of solar-system objects. IEEE Transactions of Geoscience Electronics, GE-14:135-140.
- McCord, T. G., Clark, R., and Huguenin, R. L. (1977) Mars: Infrared spectral reflection and compositional implication: submitted to Icarus.
- McCord, T. B., R. L. Huguenin, and G. L. Johnson. 1977. Photometric imaging of Mars during the 1973 Opposition. Icarus 31/3:293-314.
- McCord, T. B., R. L. Huguenin, D. Mink, and C. Pieters. 1977. Spectral reflectance of martian areas during the 1973 Opposition: Photo-electric filter photometry 0.33-1.10 μm . Icarus 31/1:25-39.
- McCord, T. B., R. Clark, and R. L. Huguenin. 1978. Mars: Near-Infrared spectral reflectance and compositional implications. Journal of Geophysical Research in press.
- McGetchin, T. R. and Huguenin, R. L. 1978. Workshop on Mars Petrology, Rep. Lunar and Planetary Institute (in press).
- McCord, T. B., R. L. Huguenin, D. Mink, and C. Pieters. 1977. "Spectral Reflectance of Martian Areas during the 1973 Opposition: Photo-electric Filter Photometry 0.33-1.10 μm ," Icarus, 31, 25.
- McCord, T. B., Huguenin, R. L., and Johnson, T. 1977. "Photometric Imaging of Mars During the 1973 Opposition," Icarus, 31, 293.
- McCord, T. B., and T. V. Johnson. 1978. Saturn's magnetic field: Evidence from optical observations. Submitted to Icarus.
- McCord, T. B., and R. B. Singer. 1978. Characterization of Mars surface units. Lunar and Planetary Science IX in press.
- Melosh, H. J. and D. Dzurisin. 1978. Tectonic implications for the gravity structure of Caloris Basin, Mercury. Icarus 33/141-144.
- Melosh, H. J. and D. Dzurisin. 1977. Mercurian global tectonics: A consequence of tidal despinning? Icarus in press.
- Michel, K.-W., L. Biermann, H.-J. Bolle, H. Bückner, H. Fechtig, G. Horneck, D. Krankowsky, F. M. Neubauer, D. Stöffler, U. v. Zahn, E. Kirste, T. Kirsten, G. Neukum, J. Schubart, G. Traving. 1977. Denkschrift Planetenforschung, im Auftrag der Deutschen Forschungsgemeinschaft. Harald Boldt Verlag KG, Boppard, Germany.

- Moore, H. J., Hutton, R. E., Scott, R. F., Spitzer, C. R., and Shorthill, R. W. 1977. Surface materials of the Viking landing sites. *Journal of Geophysical Research* 82:4497-4523.
- Moore, H. J., Hutton, R. E., Scott, R. F., Spitzer, C. R., and Shorthill, R. W. 1977. Surface materials of the Viking landing site, Mars. *Special Mars Abstracts Eighth Lunar Science Conference, Lunar Science Conference, Lunar Science Institute, March 14-18, 1977.*
- Moore, H. J., Liebes, S., Jr., Crouch, D. S., and Clark, L. V. 1977. Rock Pushing - Viking 2 [abs.]. Abstracts 8th Annual Meeting, Division for Planetary Sciences, American Astronomy Society, 19-22 January 1977, Honolulu, Hawaii, p. 7.
- Moore, H. J., Liebes, S., Jr., Crouch, D. S., and Clark, L. V. 1977. Rock pushing and under-rock sampling on Mars [abs]. XXth COSPAR Meeting, Tel Aviv, Israel, 7-18 June 1977, p. 131.
- Moore, H. J., Liebes, S., Jr., Crouch, D. S., and Clark, L. V. 1978. Rock pushing and sampling under rocks on Mars. U.S. Geological Survey Professional Paper in press.
- Morris, E. C. and J. R. Underwood. 1978. Polygonal fractures of the martian plains. NASA TMX in press.
- Murray, B. 1976. Imaging Strategy. IN: A Geological Basis for the Exploration of the Planets, p. 26-32. NASA SP-417.
- Murray, B. and E. Burgess. 1977. Flight to Mercury. New York, Columbia University Press, 172 p.
- Murray, B. C., R. Greeley, and M. Malin, 1977. The Terrestrial Planets. In review. W. H. Freeman, San Francisco.
- Mutch, T. A. et al., (1976) Fine particles on Mars: Observations from the Viking 1 lander cameras: Science, 194, 87-91.
- Mutch, T. A. et al., (1976) The surface of Mars: The view from the Viking 2 lander: Science, 194, 1277-1283.
- Mutch, T. A. et al., (1976) The surface of Mars: The view from Viking 1 lander: Science, 193, 791-801.
- Mutch, T. A., R. E. Arvidson, J. W. Head, III, K. L. Jones, and R. S. Saunders. 1976. The Geology of Mars. Princeton University Press, 400 p.
- Mutch, T. A., Arvidson, R. E., Binder, A. B., Guinness, E. A., and Morris, E. C. (1977) The geology of the Viking lander 2 site: Journal of Geophysical Research, 82:28, 4452.

- O'Donnell, W. P., Masson, Ph. and Thomas, P. 1978. Structural pattern of Mercury. Submitted to ICARUS.
- Phillips, R. J. and R. S. Saunders. 1976. The Tharsis region on Mars: Implications for evolution and present state of the interior (abs.). Bull. Amer. Astr. Soc. 8.
- Phillips, R. J. and R. S. Saunders. 1978. The Tharsis region of Mars: Results of a workshop on origin and evolution. Submitted to EOS.
- Pollack, J. B., Colburn, D., Kahn, R., Hunger, J., Van Camp, W., Carlston, C. E., and Wolfe, M. R. (1977) Properties of aerosols in the martian atmosphere, as inferred from Viking lander imaging data: Journal of Geophysical Research, 82:28, 4479.
- Roth, L., C. Elachi and R. J. Phillips, "Equipotential Doming in Flooded Circular Basins on the Moon," Proc. Lunar Sci. Conference, 8th, 643-654, 1977.
- Sagan, C. 1976. Erosion and the Rocks of Venus, Nature, 261, 31. Also in "Reports of Accomplishments of Planetology Programs, 1975-1976," NASA TM X-3364.
- Sagan, C., T. Mutch et al. Viking Lander Imaging, Early Results, EOS: Transactions of the American Geophysical Union, 57, 945.
- Sagan, C., T. Mutch et al. The Geology of the Viking Lander I Site, J. Geophys. Res., in press.
- Sagan, C., E. Levinthal et al. The Viking Lander Cameras as a Life Detection Experiment, J. Geophys. Res., in press.
- Sagan, C. Mars as Seen by Viking, La Gazette d'Uranie No. 5, 28-29, August (summary of invited discourse at 16th General Assembly, International Astronomical Union, Grenoble, France).
- Sagan, C., C. Mass. A Numerical Circulation Model with Topography of the Martian Southern Hemisphere, J. Atmos. Scis., 33, 1418-1430. Abstract in "Reports of Accomplishments of Planetary Programs, 1975-76", NASA TM X-3364.
- Sagan, C., J. Lederberg. The Prospects for Life on Mars: A Pre-Viking Assessment, Icarus, 28, 291-300.
- Sagan, C., J. Veverka and R. Greeley. Variable Features on Mars VI. An Unusual Crater Streak in Mesogaea, Icarus, 27, 241-253.
- Sagan, C. On Solar System Nomenclature, Icarus, 27, 575-576.

- Sagan, C. The Prospects for Life on Mars: A Post-Viking Assessment, in preparation.
- Sagan, C., J. Veverka et al. Variable Features on Mars VIII. Pandoraae Fretum, Icarus, to be submitted.
- Saunders, R. S. 1976. Gravity. IN: A Geological Basis for the Exploration of the Planets, p. 64-66. NASA SP-417.
- Saunders, R. S. and M. C. Malin. 1976. Venus: Geologic Analysis of Radar Images. *Geologica Romana* (in press).
- Saunders, R. S. and M. C. Malin. 1977. Geologic Interpretation of New Observations of the Surface of Venus. *Geophysical Research Letters* 4/11:547-550.
- Saunders, R. S., M. C. Malin, R. Goldstein, R. Green, and H. Rumsey. 1977. Venus radar imaging and geologic interpretation. (Abstract). Reports of Planetary Geology Program 1976-1977. NASA TM X3511, 61.
- Schaber, G. G. 1976. Radar images and terrestrial radar observations sections. IN: A geological basis for the exploration of the planets (R. Greeley and M. H. Carr, co-eds.). NASA Special Publication 417.
- Schaber, G. G. 1977. Side-looking airborne radar photogrammetric analysis of small scale surface roughness. IN: Reports of Planetary Geology, 1976-1977. NASA TMX-3511. .
- Schaber, G. G., G. L. Berlin, W. E. Brown, Jr., C. Elachi, and R. G. Fenner. 1977. Correlation of surface roughness statistics in Death Valley, CA with airborne radar data: Applications to spacecraft-borne terrestrial and planetary radar experiments. Abstract to the Microwave Remote Sensing Symposium (invited paper), Houston, Texas.
- Schaber, G. G., G. L. Berlin, W. E. Brown, Jr., and P. G. Sanchez. 1976. Side-looking airborne radar (SLAR) image analyses of Death Valley, CA. Abstracts of Papers, the First Conference on Scientific Research in the National Parks, New Orleans, LA.
- Schultz, Peter H., and R. Greeley, 1977. Results from a planetary geology short course, in Reports of the Planetary Geology Program, NASA TM X 3511, pp. 287-288.
- Schultz, P. H., and R. Greeley, eds., 1977. Primer in Planetary Geology, NASA-Ames Research Center.
- Scott, D. H. 1977. Mars, highlands-lowlands: Viking contributions to Mariner relative age studies. *Icarus* in press.

- Scott, D. H., and C. D. Condit. 1977. Correlations - Martian stratigraphy and crater density. IN: Reports of Planetary Geology Program, 1976-1977. NASA TMX-3511.
- Scott, D. H., and J. R. Underwood, Jr. 1977 Contrast in Viking and Mariner 9 view of Cydonia region, Mars. Cordilleran Section, Geological Society of America.
- Scott, D. H., J. A. Watkins, and J. M. Diaz. 1978. Regional deformation of mare surfaces. Proceedings of the Ninth Lunar Science Conference in press.
- Shelton, John S., R. Papson and M. Womer, 1978. Aerial guide to geological features of southern California, in Aeolian features of southern California: A comparative planetary geology guidebook, pp. 215-220.
- Shorthill, R. W., Hutton, R. E., Moore, H. J., Scott, R. F., and Spitzer, C. R. 1976. Physical properties of the martian surface from the Viking 1 Lander: preliminary results. Science 193/4255:805-809.
- Shorthill, R. W., Moore, H. J., Scott, R. F., Liebes, S., Jr., Hutton, R. E., and Spitzer, C. R. 1976. The "soil" of Mars. Science 194/4260:91-97.
- Shorthill, R. W., Moore, H. J., Hutton, R. E., Scott, R. F., and Spitzer, C. R. 1976. The environs of Viking 2 Lander. Science 194/4271: 1309-1318.
- Shorthill, R. W., Moore, H. J., Hutton, R. E., Scott, R. F., and Spitzer, C. R. 1977. The "soil" of Mars. XXth COSPAR Meeting, Tel Aviv, Israel, 7-18 June 1977, p. 130.
- Shorthill, R. W., Moore, H. J., Hutton, R. E., Scott, R. F., and Spitzer, C. R. 1977. Physical properties of the surface of Mars [abs]. Abstracts 8th Annual Meeting, Division for Planetary Sciences, American Astronomy Society, 19-22 January 1977, Honolulu, Hawaii, p. 6.
- Simonds, C. H., R. B. Merrill, P. H. Schultz, J. W. Minear, J. R. Underwood, Jr., S. C. Solomon, M. S. Gibson, eds., 1977. Comparisons of Mercury and the Moon - Proceedings of 1976 conference at Lunar Science Institute. Physics of Earth and Planetary Interiors 15/2,3: 113-314.
- Simonds, C., Schultz, P. H., and Solomon, S., 1977. Comparison of Mercury and the Moon: A Conference. EOS 59, 43-48.
- Simpson, R. A., G. L. Tyler, and B. J. Lipa. Oct 1977a. Mars Surface Properties Observed by Earth-Based Radar at 70, 12.5, and 3.8 cm Wavelengths. Icarus 32/2:147-167.

- Simpson, R. A., H. T. Howard, and G. L. Tyler. 1977b. Radar Geology. in Reports of Planetary Geology Program, 1976-1977, NASA Technical Memorandum NASA TM X-3511, compiled by R. Arvidson and R. Wahmann, pp. 272-274.
- Simpson, R. A., G. L. Tyler, and D. B. Campbell. 1978. Arecibo Radar Observations of Surface Characteristics Near the Martian Equator. *Icarus*, in press.
- Smith, B. A., G. A. Briggs, G. E. Danielson, A. F. Cook, M. E. Davies, G. E. Hunt, H. Masursky, L. A. Soderblom, T. C. Owen, C. Sagan, and V. E. Suomi. 1977. Voyager Imaging Experiment. *Space Science Reviews* 21/2:103-127.
- Smyth, J. R., Huguenin, R. L., and McGetchin, T. R. 1978. "Composition of Martian Primary Lavas - Convergence of Model Results, Lunar and Planetary Science, 9, 1077.
- Soderblom, L. A. 1976. Viking orbital calorimetric images of Mars: Preliminary results. *Science* 194/4260:97-99.
- Soderblom, L. A. 1978. Geological implications of regional color variations in the martian equatorial regions. NASA TMX in press.
- Soderblom, L. A., K. Edwards, E. M. Eliason, E. M. Sanchez, and M. P. Charette. 1978. Global color variations on the martian surface. In press.
- Soderblom, L. A., and D. B. Wenner. 1978. Possible fossil H₂O liquid-ice interfaces in the martian crust. In press.
- Spudis, P. D., 1978. Composition and Origin of the Apennine Bench Formation. *Lunar Sci. Conf. 9th*, in press.
- Spudis, P. D., 1978. Origin and Distribution of KREEP in Apollo 15 Soils. *Lunar Sci. Conf. 9th*, in press.
- Spudis, P. D., and R. Greeley, 1976. Surficial geology of Mars: A study in support of a Penetrator Mission to Mars. NASA TM X-73184, 55 p.
- Spudis, P. D., and R. Greeley, 1976. Surficial geologic mapping of Mars. Abstracts, Div. Planet. Sci.
- Strom, R. G. 1977. Origin and Relative Age of Lunar and Mercurian Intercrater Plains. *Phys. Earth Planet. Interiors.* 15, 156-172.
- Stromquist, A. W., 1976. Geometry and growth of grabens, Lower Red Lake Canyon area, Canyonlands National Park, Utah: Univ. of Mass., Dept. of Geology/Geography Contr. No. 28, 118 p.

- Thomas, P. 1977. Recherche et étude des linéaments structuraux visibles à la surface de Mercure. DEA de Géologie Structurale, Université Paris-Sud, 91405 Orsay Cedex (France).
- Toulmin, P. III, Clark, B. C., Baird, A. K., Keil, K., Rose, H. J. Jr., 1976. Preliminary results from the Viking X-ray fluorescence experiment: The first sample from Chryse Planitia, Mars: Science, v. 194, no. 4260, p. 81-84.
- Toulmin, P., B. C. Clark, A. K. Baird, K. Keil, and H. J. Rose. 1976. Preliminary results from the Viking x-ray fluorescence experiment: The first sample from Chryse Planitia, Mars. Science 194:81-83.
- Toulmin, Priestley, III, Baird, A. K., Clark, B. C., Keil, Klaus, and Rose, H. J., Jr., 1977. Report of the Viking Inorganic Chemical Analysis Team: Jour. Geoph. Res., v. 82, p. 4575.
- Toulmin III, Priestley, A. K. Baird, B. C. Clark, Klaus Keil, H. J. Rose, Jr., R. P. Christian, P. H. Evans, and W. C. Kelliher. 1977. Geochemical and mineralogical interpretation of the Viking inorganic chemical results. J. Geophys. Res. 82/28:4625-4634.
- Toulmin, P., Baird, A. K., Clark, B. C., Keil, K., Rose, H., Christian, R. P., Evans, P. H., and Kelliher, W. C., 1977. Geochemical and mineralogical Interpretation of Viking inorganic chemical results (abs.): Am. Geophys. Union Trans., 58, p. 828.
- Toulmin, Priestley, III, Clark, B. C., Baird, A. K., Rose, H. J., Jr., and Keil, K., 1977, Elemental composition of the Martian surface (abs.), Am. Chem. Soc. 173d Annual Meeting, Abstracts of Papers, sec. CHED, no. 56.
- Toulmin, Priestley, III, Baird, A. K., Clark, B. C., Keil, Klaus, Rose, H. J., Jr., Christian, R. P., Evans, P. H., and Kelliher, W. C., 1977, Geochemical and mineralogical interpretation of the Viking inorganic, chemical results: Jour. Geoph. Res., v. 82, p. 4625-4634.
- Toulmin, P., III, Clark, B. C., Baird, A. K., Rose, H. J., Jr., and Keil, K. 1977. Chemical and mineralogical composition of Martian surface materials (abs.): Program XX Annual COSPAR Meeting, Tel-Aviv, Israel.
- Trask, N. J. 1977. The distribution of plains according to relative age in the Discovery quadrangle, Mercury. Geological Society of America.
- Trask, N. J. 1977. Geologic mapping of the planets. IN: Primer of Planetary Geology (Schultz, P. and Greeley, R., eds.).

- Tyler, G. L., D. B. Cambell, G. S. Downs, R. R. Green, and H. J. Moore. 1976. Radar characteristics of Viking 1 landing sites. *Science* 193/4255:812-815.
- Tyler, G. L., H. T. Howard, A. W. England and J. Cuzzi. 1976. Radar Studies of Surface Properties. NASA Special Publication, "A Geological Basis for the Exploration of the Planets", NASA SP-417 edited by R. Greeley and M. H. Carr:
- Vilas, F., and T. B. McCord. 1976. Mercury: Spectral reflectance measurements (0.33-1.06 μm) 1974/75. *Icarus* 28/4:593-599.
- Wilbur, C. L., 1978. Volcano-tectonic history of Tsiolkovskij, Lunar Sci. Conf. 9th, in press.
- Wise, D. U., and McGill, G. E., 1976. Field Studies; in Greeley, R. and Carr, M., ed., A geological basis for the exploration of the planets: NASA SP-417, 88-91.
- Wood, C. A. and Head, J. W. (1977) Rift valleys on Earth, Mars and Venus: Proceedings of the Paleorift System with Emphasis on the Permian Oslo Rift, N.A.T.O. Advanced Study Institute, Oslo, in press.

IMPACT CRATER STUDIES

- Allen, C. C. 1977. Rayed Craters on the Moon and Mercury. *Phys. Earth Planet. Interiors* 15, 179-188.
- Arvidson, R. and Guinness, E. 1977. Crater and block populations at the Viking 1 site. IN: NASA TM-X-3511 Reports of Planetary Geology Program 1976-1977, 108-110.
- Boyce, J. M. and Roddy, D. J. 1978. Martian Rampart Craters: Crater Processes that May Affect Diameter-Frequency Distribution: NASA TM 79729, p. 162-164.
- Caputo, C, R. Casacchia, G. Cavarretta, M. Parotto, A. Carusi, M. Fulchignoni. "Mercury cratering I: a catalogue of large craters (belt from $+60^{\circ}$ to -60° of latitude)." *Geologica Romana*, XV., pag. 435 - 1976.
- G. Caputo, M. Parotto, A. Carusi, M. Fulchignoni. "Mercury cratering IV: a comparison between different physiographic provinces." *Geologica Romana*, XV., pag. 467 - 1976.
- Carr, M. H. 1978. Distribution and emplacement of ejecta around martian impact craters. *Proceedings of Symposium on Impact Cratering, Flagstaff, AZ, 1976.* Pergamon Press in press.
- Carr, M. H., L. S. Crumpler, J. A. Cutts, R. Greeley, J. E. Guest, and H. Masursky. 1977. Martian craters and emplacement of ejecta by surface flow. *Journal of Geophysical Research* 82:4055-4065.
- A. Carusi, M. Fulchignoni, C. Caputo, M. Parotto. "Mercury cratering II: distribution pattern of diameters, areas, and perimeters of craters having a radius 10 km." *Geologica Romana*, XV., pag. 451 - 1976.
- A. Carusi, M. Fulchignoni, M. Poscolieri, C. Caputo, R. Casacchia, M. Parotto. "Mercury cratering III: a catalogue of large polar craters, some statistical considerations." *Geologica Romana*, XV., pag. 456 - 1976.
- A. Carusi, M. Fulchignoni, M. Poscolieri, C. Caputo, R. Casacchia, M. Coradini, M. Parotto. "Mercury cratering: statistical recognition of physiographic units and their evolution." *Lunar Science VIII - Lsi.* pag. 160 - 1977.
- A. Carusi, M. Fulchignoni, M. Poscolieri, C. Caputo, R. Casacchia, M. Coradini, M. Parotto. "Mercury cratering: statistical recognition of physiographic units and their evolution." *Proc. Lunar, Sci. Conf.* 8th pag. 3565-3574, - 1977.
- A. Carusi, M. Fulchignoni, M. Poscolieri, R. Casacchia. "Morphological characterization of the Mercury large craters: statistical behaviour of the craters in H1, H6, H7, H8, H11, and H15 quadrangles." NASA TM X-3511, NASA Washington, D.C., May 1977, pag. 105.

- R. Casacchia, M. Fulchignoni, M. Poscolieri. "Planetary cratering: statistical definition of an equilibrium surface," Lunar Science IX - Lsi., - 1978.
- Chapman, C. R., and Jones, K. L. 1977. Cratering and obliteration history of Mars. Ann. Rev. Earth Planet. Sci. 5:515-540.
- Chapman, C. R. 1976. Chronology of terrestrial planet evolution: Evidence from Mercury. Icarus 29:523-536.
- Cintala, M. J. et al. (1976) Mercury crater analyses: An automated data gathering and handling system: Moon-Mercury Conference, The Lunar Science Institute, Houston, 5.
- Cintala, M. J., Head, J. W., and Mutch, T. A. (1976) Martian crater depth/diameter relationships: Comparisons with the Moon and Mercury: Geochimica et Cosmochimica Acta, Suppl. 7, 3575-3588.
- Cintala, M. J., Wood, C. A., and Head, J. W. (1977) The effects of target characteristics on fresh crater morphology: Preliminary results for the Moon and Mercury: Geochimica et Cosmochimica Acta, Suppl. 8, in press.
- Cintala, M. J. (1977) Martian fresh crater morphology and morphometry - A pre-Viking view: Proceedings of the Planetary Cratering Conference, Pergamon, in press.
- Condit, C. D. 1977. Distribution and relationships of 4-10 km diameter craters to global geologic units on Mars. U.S. Geological Survey Open-file Report 77-421.
- Condit, C. D. 1978. Distribution and relations of 4 to 10-km diameter craters to global geologic units of Mars. Icarus in press.
- Crater Analysis Techniques Working Group. 1977. Standard techniques for presentation and analysis of crater size-frequency data. NASA Special Publications, in press.
- Dial, A. L., Jr. 1978. The Viking I landing site crater diameter-frequency distribution. NASA TMX in press.
- De Hon, R. A. 1977. Multi-singed basins: A model for formation in multi-layered media. NASA Tech. Mem. X-3511, p. 111-112.
- De Hon, R. A. 1978. Stratigraphy and Crater Morphology. in Lunar Science IX, in press.
- Eppler, D. T., Nummedal, D., and Ehrlich, R., 1977. Large scale geologic trends in lunar bedrock--Fourier analysis of planimetric crater shape (abs.): Abstracts of Papers Submitted to the Eighth Lunar Science Conference, The Lunar Science Institute, Houston, Texas, p. 284-286.

- Eppler, D. T., Nummedal, D., and Ehrlich, R., 1978. Structural implications of lunar crater elongation (abs.): Abstracts of Papers Submitted to the Ninth Lunar Science Conference, The Lunar Science Institute, Houston, Texas (in press).
- Eppler, D. T., Nummedal, D., and Ehrlich, R., 1976. Fourier analysis of the planimetric shape of lunar craters (abs.): Papers Presented to the Symposium on Planetary Cratering Mechanics, Flagstaff, Arizona,]3-17 September, 1976, The Lunar Science Institute, Houston, Texas (insert in Abs. volume).
- Eppler, D. T., Nummedal, D., and Ehrlich, R., 1977. Fourier analysis of lunar crater shape--possible guide to impact history and lunar geology: in Impact and Explosion Cratering (D. J. Roddy, R. O. Pepin, and R. B. Merrill eds.), Pergamon Press, New York.
- M. Fulchignoni. "Mercury craters morphology: statistics on selected areas." NASA TM X-3364, March, 1976, pag. 182.
- Gault, D. E. and Greeley, R. Exploratory experiments of impact craters formed in viscous-fluid targets; analogues for martian rampart craters? Icarus in press.
- Guest, J. E. and D. E. Gault, 1976. Crater populations in the early history of Mercury. Geophys. Res. Letters, Vol. 3, 121-123.
- Gault, D. E., and R. Greeley, 1978. Exploratory experiments of impact craters formed in viscous-liquid targets: Analogues for martian rampart craters? Icarus, in press.
- Greeley, R., 1976. Mare emplacement in the Orientale Basin. Lunar Science Conf. 7th, pp. 334-335.
- Hawke, B. R. and Cintala, M. J. (1977). Impact melts on Mercury and the Moon: Bulletin of the American Astronomical Society, 9, 531.
- Head, J. W., Wood, C. A., and Cintala, M. J. (1976). Morphological degradation of mercurian craters: Moon-Mercury Conference, The Lunar Science Institute, Houston, 15.
- Head, J. W. and Roth, R. (1976). Mars pedestal crater escarpments: Evidence for ejecta related emplacement: Symposium on Planetary Cratering Mechanics, The Lunar Science Institute, Houston, 50-52.
- Head, J. W. (1978). Origin of central peaks and peak rings: Evidence from peak-ring basins on Moon, Mars, and Mercury: Lunar Science IX,
- Hodges, C. A. 1978. Central pit craters on Mars. Lunar and Planetary Science IX - Abstracts, Lunar Science Institute, Houston, Texas in press.

- King, J. S., and D. H. Scott. 1978. The significance of buried craters associated with basins on the Moon and Mars. NASA TMX in press.
- König, B., G. Neukum, and H. Fechtig. 1977. Recent lunar cratering: Absolute ages of Kepler, Aristarchus, Tycho. Expanded abstracts of the 8th Lunar Science Conference, Houston, Texas, part 2:555-557.
- Malin, M. C. 1976. Constraints on Cratering Histories of Mercury, the Moon, and Mars from Observations of Large Craters and Basins. Proc. 7th Lunar Science Conf., Vol. 3, 3589-3602.
- Malin, M. C. and D. Dzurisin. 1977. Landform Degradation on Mercury, the Moon, and Mars: Evidence from Crater Depth/Diameter Relationships. Jour. Geophys. Res., 82, 376-388.
- Malin, M. C. and D. Dzurisin. 1978. Modification of Fresh Crater Landforms: Evidence from the Moon and Mercury. Jour. Geophys. Res. 83, 233-243.
- Masursky, Harold. 1977. Cratering mechanics and future martian exploration. IN: Planetary Cratering Mechanics (Roddy, D. and Pepin, R. eds.). Pergamon Press in press.
- McCauley, J. F. 1976. Orientale and Caloris. Conference on Comparisons of Mercury and the Moon, Contribution 262, Houston, Texas, 24.
- McCauley, J. F. 1977. Orientale and Caloris. Physics of the Earth and Planetary Interiors 15:220-250.
- McCauley, J. F. 1977. Multi-planet, multi-ring basin studies. IN: Reports of Planetary Geology Program, 1976-1977. NASA TMX-3511.
- McGill, G. E., 1977. Craters as "fossils"; the remote dating of planetary surface materials: Geol. Soc. America Bull., 88, 1102-1110.
- Nagel, K., G. Neukum, J. S. Dohnanyi, H. Fechtig, and W. Gentner. 1976. Density and chemistry of interplanetary dust particles, derived from measurements of lunar microcraters. Proc. Lunar Sci. Conf. 7th, 1021-1029.
- Neukum, G. and D. U. Wise. 1976. Mars: A standard crater curve and possible new time scale. Science 194: 1381-1387.
- Neukum, G. and P. Horn. 1976. Effects of lava flows on lunar crater populations. The Moon 15: 205-222.
- Neukum, G. and B. König. 1976. Dating of individual lunar craters. Proc. Lunar Science Conf. 7th, 2867-2881.
- Neukum, G. 1977. Lunar cratering. Phil. Trans. R. Soc. Lond. A. 285: 267-272.

- Neukum, G. 1977. Different ages of lunar light plains. Expanded abstracts of the 8th Lunar Science Conference, Houston, Texas, part 2:723-725.
- Neukum, G. 1978. Different ages of lunar light plains. The Moon in press.
- Neukum, G., H. Fechtig, B. Koenig, K. Hiller, and D. U. Wise. 1977. Lunar and Martian Cratering Studies, and Mars Mariner 9 Geologic Mapping. NASA TM X-3511:81-84.
- Peterson, J. E. 1978. Antipodal effects of major basin-forming impacts on Mars (Abstract). In Lunar and Planetary IX, in press. The Lunar Science Institute, Houston, Texas.
- Roth, L. E., C. Elachi, R. S. Saunders and G. Schubert. 1978. Radar depths of large martian craters. Lunar Science IX (Houston, Lunar Science Institute).
- Schaber, G. G. and J. M. Boyce. 1976. Moon-Mercury: Basins, secondary craters and early flux history. Conference on Comparison of Mercury and the Moon, Lunar Science Institute, Houston, Texas.
- Schaber, G. G. and J. M. Boyce. 1977. The cratered surfaces of Mars, Venus, Mercury and the Moon: Evidence of similar average viscosities over the past 4+ aeons. IN: Lunar Science VIII - Part II, The Lunar Science Institute, Houston, Texas.
- Schaber, G. G., and J. M. Boyce. 1978. Probable distribution of large impact basins on Venus: Comparison with Mercury and the Moon. IN: Planetary Cratering Mechanics (Roddy, D. and Pepin, R., eds.). Pergamon Press in press.
- Schubert, G., R. E. Lingenfelter and R. J. Terrile. 1977. Crater evolutionary tracks. Icarus 32: 131-146.
- Schultz, P. H. and Gault, D., 1976-1976, p. 277-278. Atmospheric effects on ballistic impact ejecta: implications for martian craters. (abs.) Trans. Amer. Geophys. Union, 57, 948.
- Schultz, P. H., R. Greeley, and D. E. Gault, 1976. Degradation of small mare surface features. Proc. Lunar Sci Conf. 7th, pp. 985-1003.
- Schultz, P. H. and Gault, D. E., 1977. Impact ejecta in a martian atmosphere. (abs.) Special Session on Viking Results, Lunar Science VIII.
- Schultz, P. H., 1977. Endogenic modification of impact craters on Mercury. Physics of the Earth and Planetary Interiors, 15, 202-219.

- Schultz, P. H., R. Greeley, and D. E. Gault, 1977. Interpreting statistics of small craters. Proc. Lunar Sci. Conf. 8th, pp. 3539-3564.
- Schultz, P. H. and Mendell, W., 1977. Thermal signatures of primary and secondary crater fields. (abs.) EOS (in press).
- Schultz, P. H., 1978. Ejecta dynamics of large-scale impacts. Lunar Science IX, p. 1024-1026. Lunar and Planetary Institute, Houston.
- Schultz, P. H., and Gault, D. E., 1978. Impact ejecta emplacement on Mars. Lunar Science IX, p. 1027-1029. Lunar and Planetary Institute, Houston.
- Scott, D. H. 1977. Moon-Mercury: Relative preservation states of secondary craters. Physics of the Earth and Planetary Interiors 15: 173-178.
- Simpson, R. A., G. L. Tyler, and H. T. Howard. 1978. Crater Morphometry from Bistatic Radar. Proceedings of the Symposium on Planetary Cratering Mechanics, Pergamon Press, New York, in press.
- Smith, E. I. 1976. Comparison of the crater morphology-size relationship for Mars, Moon and Mercury, Icarus, 28:543-550.
- Smith, E. I. and Hartnell, J. A. 1977. The effects of non-gravitational factors on the shape of martian, lunar and mercurian craters: target effects. NASA TMX-3511: 28.
- Smith, E. I. and Hartnell, J. A. 1978. Revised crater shape-size data for the Moon and Mercury, NASA TMX (in press).
- Soderblom, L. A. 1977. Historical variations in the density and distribution of impacting debris in the inner solar system: Evidence from planetary imaging. IN: Planetary Cratering Mechanics (Roddy, D., and Pepin. R., eds). Pergamon Press in press.
- Soderblom, L. A. 1977. Relative ages of Mercurian plains. IN: Reports of Planetary Geology Program, 1976-1977. NASA TMX-3511.
- Tauber, M. E., Kirk, D. B., and Gault, D. E. An analytical study of impact ejecta trajectories in the atmospheres of Venus, Mars, and Earth. Icarus in press.
- Trask, N. J. 1976. History of basin development on Mercury. IN: Primer of Planetary Geology (Schultz, P. and Greeley, R., eds.).
- Trask, N. J. 1976. Cratering history of the heavily cratered terrain on Mercury. Icarus in press.

- Wood, C. A., Cintala, M. J., and Head, J. W. (1976). Morphological characteristics of fresh craters: Mercury, Moon, Mars: Moon-Mercury Conference, The Lunar Science Institute, Houston, 38.
- Wood, C. A. and Head, J. W. (1976). Comparison of impact basins on Mercury, Mars, and the Moon: Geochimica et Cosmochimica Acta, Suppl. 7, 3629-3651.
- Wood, C. A., Head, J. W. and Cintala, M. J. (1977) Crater degradation on Mercury and the Moon: Clues to surface evolution: Geochimica et Cosmochimica Acta, Suppl. 8, in press.
- Wood, C. A., Cintala, M. J., and Head, J. W. (1978). Interior morphometry of fresh martian craters: Preliminary Viking results: Lunar Science IX,
- Woronow, A. 1977. Crater saturation and equilibrium: a Monte Carlo simulation. J. Geophys. Res. 82, 2447-2456.
- Woronow, A. 1977. A general cratering history model and its implications for the lunar highlands, Icarus, in press.
- Woronow, A. 1977. The expected frequency of doublet craters. Icarus, in press.

VOLCANISM STUDIES

- Allen, C. C. 1978. Interactions of volcanism and ice - Earth, Mars and icy satellites. Abstract in Bull. Am. Astron. Soc. 9/4:541.
- Aubele, J. C. 1977. Geology of the Cerros del Rio volcanic field, Los Alamos, Sandoval, and Santa Fe Counties, New Mexico. M.S. thesis submitted to University of New Mexico.
- Brookins, D. G., Crumpler, L. S., and Elston, W. E. 1977. Strontium isotope initial ratios from the Mount Taylor Volcanic field, New Mexico. Isochron/West in press.
- Brookins, D. G., Eppler, Dean, and Elston, W. E. 1977. Strontium isotope initial ratios from the San Antonio Mountain area, New Mexico. Isochron/West in press.
- Burmeier, T. L., and H. E. Holt. 1978. Preliminary study of North Tesihim Butte, Navajo County, Arizona. NASA TMX in press.
- Carr, M. H. 1976. The volcanoes of Mars. Scientific American 234: 32-43.
- Carr, M. H. 1976. Elevation of Martian volcanoes as a function of age. NASA Technical Manual-X-3364, p. 152-153.
- Carr, M. H. . Lava flows in the south Tharsis region of Mars and their rheological properties. Proceedings Second Inter-team Meeting, Basaltic Volcanism Study Project, v. 2, Lunar Science Institute.
- Carr, M. H., K. R. Blasius, R. Greeley, J. E. Guest, and J. B. Murray. 1977. Some martian volcanic features as viewed from the Viking Orbiters. Journal of Geophysical Research 82:3985-4015.
- Champion, D. D., and R. Greeley, 1977. Geology of the Wapi Lava Field, Snake River Plain, Idaho, in Volcanism of the Eastern Snake River Plain, Idaho: A comparative planetary geology guidebook, NASA CR-154621, pp. 133-152.
- Crumpler, L. S. 1977. Alkali basalt-trachyte suite and volcanism, northern part of Mount Taylor volcanic field, New Mexico. M.S. thesis, University of New Mexico.
- Crumpler, L. S., and Aubele, J. C. 1977. Two-stage evolution of martian shield volcanoes from Viking Orbiter imagery. Icarus in press.
- Crumpler, L. S., and Aubele, J. C. 1977. The internal structure of cinder cones. Abstracts of the NASA Planetary Geological Field Conference on Basalt Plains, Pocatello, Idaho.
- Crumpler, L. S., Aubele, J. C., and Elston, W. E. 1977. Magnetic profiles of maar craters: anomalies and associated peripheral ring dikes. NASA TMX-3511.

- Crumpler, L. S., Aubele, J. C., and Elston, W. E. 1977. Trip guides to the Mesa Chivato, Cerros del Rio, and Mount Taylor volcanic fields, New Mexico. University of New Mexico.
- Elston, W. E. 1977. Rifting and volcanism of the New Mexico segment of the Basin and Range province, southwestern U.S.A. IN: Tectonics and Geophysics of Continental Rifts (E. R. Neumann and B. Larsen, eds.). D. Reidel Publishing Co. in press.
- Elston, W. E. 1977. Volcanism and plutonism in mid-Tertiary ignimbrite province, New Mexico, U.S.A. Abstracts to Proceedings of the Joint General Assemblies, International Association for Seismology and Physics of the Earth's Interior-International Association for Volcanology and Chemistry of the Earth's Interior, Durham, England.
- Elston, W. E. 1977. Cenozoic orogeny of southwestern United States: Ensialic analog of backarc basin. Geological Society of America Abstracts with Programs 7:966-967.
- Greeley, R., C. Wilbur, and D. Storm, 1976. Frequency distribution of lava tubes and channels on Mauna Loa Volcano, Hawaii. Geol. Soc. Amer. Abstracts with Programs, Vol. 8, No. 6, p. 892.
- Greeley, R., M. H. Carr, J. E. Guest, H. Masursky, and K. Blasius, 1976. Preliminary assessment of martian volcanic features from Viking data. Abstracts, Div. Planet. Science. p. 1.
- Greeley, R., 1977. Aerial guide to the geology of the central and eastern Snake River plain, in Volcanism of the Eastern Snake River Plain, Idaho: A comparative planetary geology guidebook, NASA CR-154621, pp. 59-112.
- Greeley, R., 1977. Basaltic "plains" volcanism, in Volcanism of the Eastern Snake River Plain, Idaho: A comparative planetary geology guidebook, NASA CR-154621, pp. 23-44.
- Greeley, R., 1977. Volcanic Morphology in Volcanism of the Eastern Snake River Plain, Idaho: A comparative planetary geology guidebook, NASA CR-154621, pp. 5-22.
- Greeley, R., and J. S. King, 1977. Road log from American Falls to Split Butte, in Volcanism of the Eastern Snake River Plain, Idaho: A comparative planetary geology guidebook, NASA CR-154621, pp. 295-308.
- Greeley, R., and P. H. Schultz, 1977. Possible planetary analogs to Snake River Plain basalt features, in Volcanism of the Eastern Snake River Plain, Idaho: A comparative planetary geology guidebook, NASA CR-154621, pp. 233-252.

- Greeley, R., E. Theilig, and J. S. King, 1977. Guide to the Geology of King's Bowl lava field, in Volcanism of the Eastern Snake River Plain, Idaho: A comparative planetary geology guidebook, NASA CR-154621, pp. 171-188.
- Greeley, R., and J. D. Iversen, 1978. Field guide to Amboy lava flow, San Bernadino Co., Ca., in Greeley et al, eds. Aeolian Features of Southern California: A comparative planetary geology guidebook, pp. 23-52.
- Greeley, R., and P. D. Spudis, 1978. The patera of Mars - a unique style of planetary volcanism. Trans. Amer. Geophysical Union, in press.
- Greeley, R., and P. D. Spudis, 1978. Mare volcanism in the Herigonius region of the Moon. Lunar Sci. Conf. 9th, in press.
- Greeley, R., and P. D. Spudis, 1978. Ridges in Western Columbia Plateau, Washington-analogs to mare-type ridges? Lunar Sci. Conf. 9th, in press.
- Greeley, R., and P. D. Spudis, 1978. Volcanism in the cratered terrain of Mars. Geophys Res. Lett. (submitted).
- Guest, J. E. and J. B. Murray, 1976. Volcanic features of the near-side equatorial lunar maria. Journ. Geol. Soc. London, Vol 132, 251-258.
- Guest, J. E. 1977. Fumarolle temperatures. United Kingdom Research on Mount Etna 1975-1976. The Royal Society (Eds. A. T. Huntingdon, G. P. L. Walker and C. R. Argent) p. 28.
- Guest, J. E. and J. B. Murray, 1977. Summary of volcanic activity during 1975/76. United Kingdom Research on Mount Etna 1975-1976. The Royal Society (Eds. A. T. Huntingdon, G. P. L. Walker and C. R. Argent) pp. 56-57.
- Guest, J. E., James R. Underwood, Jr., and Ronald Greeley, 1977. Role of lava tubes in flows from Observatory Vent, 1971 eruption of Mount Etna. NASA TM-78,436:19-22.
- Head, J. W., Settle, Mark, and Wood, C. A. (1976). Origin of Olympus Mons escarpment by erosion of pre-volcano substrate: Nature, 263, 667-668.
- Karlo, John F. and John S. King, 1976. The dependence of topography on volcanic processes within the eastern Snake River Plain, Idaho. NASA TM X-3364, p. 138-140.
- Karlo, John F., 1977, Geology of the Hell's Half Acre lava field in: Greeley, Ronald and John S. King, eds: Volcanism of the Eastern Snake River Plain, A Comparative Planetary Geology Guidebook, p. 121-131.

- Karlo, John F. and John S. King, 1977, Control of physical properties of Snake River Plain lavas on surface morphologies. NASA TM X-3511, p. 132-133.
- King, John S. and Ronald Greeley, 1976, Volcanic features and fracture sets of the south central Snake River Plain, Idaho. NASA TM X-3364, p. 135-137.
- King, John S., 1977, Regional setting of the Snake River Plain, Idaho in: Greeley-Ronald and John S. King eds: Volcanism of the Eastern Snake River Plain, A Comparative Geology Guidebook, p. 45-57.
- King, John S., 1977, Crystal Ice Cave and King's Bowl crater, Snake River Plain Idaho in: Greeley, Ronald and John S. King, eds: Volcanism of the Eastern Snake River Plain, A Comparative Planetary Geology Guidebook, p. 153-163.
- King, John S., Ronald Papson and Ronald Greeley, 1977. Lava mounds peripheral to the King's Bowl on the Great Rift, Idaho. NASA TM X-3511, p. 134-135.
- Malin, M. C. 1977. Comparison of Volcanic Features in Elysium (Mars) and Tibesti (Africa). Bull. Geol. Soc. Am. 88, 908-919.
- Masursky, Harold. 1976. Mercury, Moon, and Mars: plains and volcanic flows. Conference on Comparisons of Mercury and the Moon, Contribution 262, Houston, Texas, 23.
- Moore, H. J., Arthur, D. W. G., and Schaber, G. G. 1978. Yield strengths of flows on the Earth, Moon and Mars. Lunar Science IX, The Lunar Science Institute in press.
- Murray, J. B., J. E. Guest and P. S. Butterworth, 1977. Large ground deformation on Mount Etna volcano, 1977. Nature, vol. 266/5600, 338-340.
- Murray, J. B. 1977. Changes at the summit of Mount Etna 1973-1975. United Kingdom Research on Mount Etna 1975-1976, The Royal Society. (Eds A. T. Huntingdon, G. P. L. Walker and C. R. Argent) pp. 9-12.
- Papson, Ronald P., 1977. Geological Guide to Craters of the Moon National Monument, in Volcanism of the Eastern Snake River Plain, Idaho: A comparative planetary geology guidebook, NASA CR-154621, pp. 215-232.
- Papson, Ronald, 1977. Road log from Pocatello to Craters of the Moon National Monument, in Volcanism of the Eastern Snake River Plain, Idaho: A comparative planetary geology guidebook, NASA CR-154621, pp. 271-294.

- Papson, Ronald, 1977. Road log along Pleistocene Lake Bonneville flood-path, in Volcanism of the Eastern Snake River Plain, Idaho: A comparative planetary geology guidebook, NASA CR-154621, pp. 261-270.
- Peterson, J. E. 1978. Volcanism associated with the Hellas basin of Mars (Abstract). In Lunar and Planetary IX, in press. The Lunar Science Institute, Houston, Texas.
- Pike, R. J. 1978. Volcanism on Earth and Mars: topographic analogs of large central edifices. Lunar and Planetary Science IX in press.
- Settle, M. (1978). Structure of terrestrial cinder cone fields: AGU Spring Meeting,
- Settle, M. (1978). Viscous heating within lava flows: Implications for the formation of extremely long flows: Lunar Science IX,
- Schultz, P. H., 1976. Evidence for volcanic modification of mercurian craters. Abstracts from Conference on Comparisons of Mercury and the Moon, p. 29.
- Schultz, P. H., J. A. Burns, and R. Greeley, 1976. Ancient lunar tides and the emplacement of the mare. Lunar Sci. Conf. 7th, pp. 785-787.
- Schultz, P. H., and R. Greeley, 1977. Possible lunar analogs to Snake River Plain basalt morphology, in Abstracts for the planetary geology field conference on the Snake River Plain, Idaho, NASA TM-78,436, pp. 23-26.
- Schultz, P. H. and Greeley, R. Possible analogs to Snake River Plain basalt morphology, 1977. In Abstracts for the Planetary Geology Field Conference on the Snake River Plain, Idaho. Greeley, R. and Black, D. (eds.). NASA TM-78, 436.
- Spudis, P. D. and R. Greeley, 1977. Volcanism in the cratered uplands of Mars - a preliminary Viking view. Trans. Amer. Geophysical Union, Vol. 58, p. 1182.
- Sagan et al. The Role of Volcanic Explosions in Climatic Change, J. Geophys. Res., 81, 1071-1083.
- Saunders, R. S., L. E. Roth, C. Elachi and G. Schubert. 1978. Topographic control of volcanism and surface morphology in the Arsia Mons region of Mars. Lunar Science IX (Houston, Lunar Science Institute).
- Spear, Dallas B. and John S. King, Big Southern and East Buttes, rhyolitic domes on the Snake River Plain in Idaho. NASA TM X 3511, p. 136.

- Spear, Dallas B., 1977, Big Southern, Middle and East Buttes in: Greeley, Ronald and John S. King eds: Volcanism of the Eastern Snake River Plain, A Comparative Geology Guidebook, p. 113-119.
- Wadge, G., G. P. L. Walker and J. E. Guest, 1975. The Output of Etna Volcano.
- Wilhelms, D. E. 1976. Mercurian volcanism questioned. *Icarus* 28:551-558.
- Womer, Michael B., 1977. The origin of Split Butte, A maar type crater of the south-central Snake River Plain, Idaho, in Volcanism of the eastern Snake River Plain, Idaho: A comparative planetary geology guidebook, NASA CR-154621, pp. 189-202.
- Womer, Michael B., J. S. King, and R. Greeley, 1977. A study of the tephra deposits of Split Butte, a maar crater of the south central Snake River Plain, Idaho, in Reports of the Planetary Geology Program, NASA TM X-3511, p. 137.
- Wood, C. A. (1977). Cinder cones on Earth, Moon, and Mars: EOS, 58, 425.
- Wood, C. A. (1977). Non-basaltic shield volcanoes: Abstracts for the Planetary Geology Field Conference on the Snake River Plain, Idaho, NASA Technical Memorandum, TM-78, 436, 34-39.

EOLIAN STUDIES

- R. E. Arvidson, M. Coradini, A. Carusi, A. Coradini, M. Fulchignoni, C. Federico, R. Funicello, M. Salomone. "Latitudinal variation of wind erosion of crater ejecta deposits on Mars." *Icarus* vol. 27, No. 4, Aprile 1976.
- Arvidson, R., C. Carlston, E. Guinness, K. Jones, D. Pidek, C. Sagan, and S. Wall. 1978. Constraints on aeolian phenomena on Mars from analysis of Viking Lander camera data. IN: NASA TMX 78, 455, 3-7.
- Breed, C. S. 1977. Terrestrial analogs of the Hellespontus dunes, Mars. *Icarus* 30:326-340.
- Breed, C. S. 1978. Morphology and distribution of dunes in sand seas observed by remote sensing. IN: A study of global sand seas (E. D. McKee, ed.). U.S. Geological Survey Professional Paper 1052 in press.
- Breed, Carol S., Wesley A. Ward, and John F. McCauley. 1978. Windform patterns on Earth and on Mars: Implications for similarities of eolian processes on two planets. NASA TMX in press.
- Breed, C. S., J. F. McCauley, W. J. Breed, A. S. Cotera, and C. K. McCauley. 1978. Eolian landscapes. IN: Landscapes of Arizona, University of Arizona Press (Terah Smiley and others, eds.) in press.
- Breed, C. S., J. F. McCauley, A. W. Ward, S. G. Fryberger. 1977. Dune types and distribution in sand seas, Earth and Mars. NASA TMX 78-455.
- Breed, C. S. and W. J. Breed. 1978. Dunes and other windforms of central Australia (and a comparison with linear dunes on the Moenkopi Plateau, Arizona). IN: Scientific results of the Apollo-Soyuz Earth Observations Experiment (Farouk El-Baz, ed.). NASA Special Publication in press.
- Breed, Carol S., and William J. Breed. 1978. Field studies of sand-ridge dunes in central Australia and northern Arizona. NASA TMX in press.
- Breed, C. S., S. G. Fryberger, Sarah Andrews, C. K. McCauley, Frances Lennartz, Dana Gebel, and Kevin Horstman. 1978. Regional studies of dunes in sand seas observed by remote sensing. IN: A global study of sand seas (E. D. McKee, ed.). U.S. Geological Survey Professional Paper 1052 in press.
- M. Coradini, C. Federico, M. Fulchignoni. "Wind flow over large escarpments on Mars." *Geologica Romana*, XV., pag. 393 - 1976.
- Cotera, A. S. and C. K. McCauley. 1976. Differentiating eolian deposits using grain size parameters. IN: Reports of Accomplishments of Planetology Programs, 1975-1976. NASA TMX-3364.

- M. Fulchignoni. "The Martian scarp: influence on the wind circulation." NASA TM X-3364, March, 1976, pag. 217.
- Greeley, R., B. White, R. Leach, J. Iversen, and J. Pollack, 1976. Mars: Wind friction speeds for particle movement. Geophys. Res. Lett. Vol. 3, No. 8, pp. 417-420.
- Greeley, R., R. Papson, and J. Veverka, 1977. Crater streaks in the Chryse Planitia region, Mars. Icarus, in press.
- Greeley, R., J. B. Pollack, J. D. Iversen and B. R. White, 1977. Recent results from the martian surface wind tunnel (MARSWIT), in Reports of Planetary Geology Program, NASA TM X-3511, pp. 146-147.
- Greeley, R., P. D. Spudis, and D. Johannesen, 1978. Geology and aeolian features of the Hellas Basin floor, in Abstracts for the planetary geology field conference on aeolian processes, NASA TM-78, 455, pp. 19-21.
- Greeley, R., M. Womer, R. Papson, and P. Spudis, eds. 1978. Aeolian Features of Southern California: A Comparative Planetary Geology Guidebook, 264 p.
- Grolier, M. J., G. E. Ericksen, and J. F. McCauley. 1977. Wind-furrowed sandstone, northeastern margin of the Sechura Desert, Peru. Proceedings International Colloquium, Planetary Geology, Rome, September 1975 in press.
- Howard, A. D., 1976, Laboratory experimentation, in A Geological Basis for the Exploration of the Planets, R. Greeley and M. H. Carr, eds., NASA SP-417, p. 91-94.
- Howard, A. D., 1977. Geologic, Topographic, and Meteorologic Influences on Eolian Deposition, Earth and Mars (Abstract): Reports of Planetary Geology Program, R. Arvidson and R. Wahmann, eds., NASA TM X-3511, p. 148-149.
- Howard, A. D., Morton, J. B., Gad-el-Hak, M., and Pierce, D. B., 1977. Simulation Model of Erosion and Deposition on a Barchan Dune: NASA CR-2838, 77 p.
- Howard, A. D., 1977, Effect of Slope on the Threshold of Motion and its Application to Orientation of Wind Ripples: Geological Society of America Bulletin, v. 88, p. 853-856.
- Howard, A. D., Morton, J. B., Gad-el-Hak, M., and Pierce, D. B., 1978, Sand Transport Model of Barchan Dune Equilibrium: Sedimentology, in press.

- Howard, A. D., 1978, Origin of the Stepped Topography of the Martian Poles: Icarus, in Press.
- Iversen, J. D., R. Greeley, J. B. Pollack, 1976. Dust storms on Earth, Mars, and Venus. Jour. Atmos. Sci., Vol. 33, pp. 2425-2429.
- Iversen, J. D., R. Greeley, B. R. White, and J. B. Pollack, 1976. Saltation threshold on Mars: The effect of interparticle force, surface roughness, and low atmospheric density. Icarus, Vol. 29, pp. 381-393.
- Iversen, J. D., R. Greeley, B. R. White, and J. B. Pollack, 1976. The effect of vertical distribution in the modelling of sedimentation phenomena: Martian crater wake streaks. J. Geophys. Res., Vol. 81, pp. 4846-4856.
- Iversen, J. D. and R. Greeley, 1978. Comparison of wind-tunnel-model and atmospheric full-scale experiments of the Amboy crater and adjacent topography, in Abstracts for the planetary geology field conference on aeolian processes, NASA TM-78,455, pp. 24-26.
- Krinsley, D. H., and R. Greeley, 1978. Surface textures of sand sized particles abraded under Earth and martian conditions, in Abstracts for the planetary geology field conference on aeolian processes, NASA TM-78,455, pp. 30-32.
- McCauley, J. F. and A. S. Cotera. 1977. Eolian deposits of Paiute Trail Point Arizona, 1977. NASA TM 78-455:33-34.
- McCauley, J. F., M. J. Grolier, and C. S. Breed. 1977. Yardangs of Peru and other desert regions. U.S. Geological Survey Interagency Report - Astrogeology 81.
- McCauley, J. F., M. J. Grolier, and C. S. Breed. 1977. Yardangs. Proceedings of the Eighth Annual Geomorphology Symposium, 1977.
- McCauley, John F., A. W. Ward, C. S. Breed, M. J. Grolier and R. Greeley, 1977. Experimental modeling of wind erosion forms in Reports of the Planetary Geology Program, NASA TM X-3511, pp. 150-152.
- McCauley, John F., Carol S. Breed, and Maurice J. Grolier. 1978. Eolian erosion studies. NASA TMX in press.
- McCauley, J. F., C. S. Breed, and M. J. Grolier. 1978. The great U.S. dust storm of February 23-25, 1977. Geological Society of America, 1977 Cordilleran Section Meeting, Tempe, AZ, 116.
- McKee, E. D., and C. S. Breed. 1976. Sand seas of the world. IN: ERTS-1, a new window on our planet (R. S. Williams and W. D. Carter, eds.). U.S. Geological Survey Professional Paper 292:81-88.

- McKee, E. D., C. S. Breed, and S. G. Fryberger. 1977. Desert sand seas. IN: Skylab explores the Earth (G. P. Carr, et al., eds.). NASA Special Publication 380.
- Pollack, J. B., R. Haberle, R. Greeley, and J. Iversen, 1976. Estimates of the wind speeds required for particle motion on Mars. Icarus, Vol. 29, pp. 395-417.
- Sagan, C. Longterm Evolution of the Martian Atmosphere and Climatic Change, Abstract in "Reports of Accomplishments of Planetology Programs," 1975-76," NASA TM X-3364.
- Sagan, C. Fine Particles on the Surface of Mars. Abstract in Bull. Amer. Astron. Soc., 9, 444; and in "Reports of Planetary Geology Program, 1976-1977." NASA TM X-3511.
- Sagan, C. et al. Hellas and the Great Martian Dust Storms, in preparation.
- Sagan, C. et al. Particle Motions on Mars Inferred from the Viking Lander Cameras (with D. Peri et al.), J. Geophys. Res., in press.
- Sagan, C., O. B. Toon and J. B. Pollack. Physical Properties of the Particles Composing the Martian Dust Storm of 1971-1972, Icarus, 30, 663-696.
- Sagan, C. and Veverka, J. Albedo Variations on Mars, in preparation.
- Sagan, C. Sand Ripples on Mars, J. Geophys. Res., to be submitted.
- Saunders, R. 1977. Sedimentary Regimes on Mars. IN: Reports of Planetary Geology Program 1976-1977, p. 144-145. NASA TM-X-3511.
- Smith, R. S. U. 1977. Barchan dunes: development, persistence and growth in a multidirectional wind regime, southeastern Imperial County, California (abs). Geol. Soc. America Abstracts Programs 9/4:502.
- Smith, R. S. U. 1977. Proportional tectonic deformation as a tool for correlating shorelines of pluvial Lake Panamint, California (abs). Geol. Soc. America Abstracts Programs 9/7:1182.
- Smith, R. S. U. 1978. The Algodones dune chain, Imperial County, California (abs). NASA TM-78,455:43-44.
- Smith, R. S. U. 1978. Field trip to dunes at Superstition Mountain. IN: Aeolian features of southern California: a comparative planetary geology guidebook (R. Greeley, M. B. Womar, R. P. Papson and P. D. Spudis, eds.). NASA Office of Planetary Geology, 66-71.

- Smith, R. S. U. 1978. Guide to selected features of aeolian geomorphology in the Algodones dune chain, Imperial County, California. IN: Aeolian features of southern California: a comparative planetary geology guidebook (R. Greeley, M. B. Womar, R. P. Papson, and P. D. Spudis, eds.). NASA Office of Planetary Geology, 74-98.
- Smith, R. S. U. 1978. Late-Pleistocene paleohydrology of pluvial Lake Panamint, California (abs). Geol. Soc. America Abstracts Programs 10/3:148.
- Smith, R. S. U. 1978. Wind-deposited sand atop terrestrial boulders: possible significance for the Viking Lander 1 site on Mars (abs). NASA TM in press.
- Theilig, E., R. Papson, and M. Womer, 1978. Geological field guide to the southeastern Mojave Desert, in Aeolian Features of Southern California: a comparative planetary geology guidebook, pp. 161-214.
- Theilig, E., M. Womer and R. Papson, 1978. Geological Field Guide to the Salton Trough, in Aeolian features of Southern California: A comparative planetary geology guidebook, pp. 99-160.
- Veverka, J., C. Sagan, and R. Greeley, 1976. An unusual crater-streak in Mesogaea. Icarus, Vol. 27, pp. 241-253.
- Veverka, J., I. Thomas, and R. Greeley, 1977. A study of variable features on Mars during the Viking nominal mission. Jour. Geophys. Res., Vol. 82, pp. 4167-4188.
- Ward, A. Wesley. 1977. The yardangs at Rogers Playa, California. Abstracts with Programs, Geological Society of America Annual Meeting, Seattle, WA.
- Ward, W. A., J. F. McCauley, and M. J. Grolier. 1977. The yardangs at Rogers Playa, California. Geological Society of America Meeting, Seattle, WA.
- Ward, A. Wesley, John F. McCauley, and Maurice J. Grolier. 1978. The yardangs at Rogers Playa, California. NASA TMX in press.
- White, B. R., and R. Greeley, 1978. Wind transport rates on Mars, in Abstracts for planetary geology field conference on aeolian processes, NASA TM-78,455, pp. 48-51.
- White, B. R., R. Greeley, J. D. Iversen, and J. B. Pollack, 1976. Estimated grain saltation in a martian atmosphere. Jour. Geophys. Res., Vol. 81, pp. 5643-5650.

FLUVIAL STUDIES

- Baker, V. R. and P. C. Patton. 1976. Missoula flooding in the Cheney-Palouse scabland tract: terrestrial analogue to the channeled terrain of Mars. Geological Society of America Abstracts with Programs 8/3: 351-352.
- Baker, V. R. 1977. Viking-slashing at the martian scabland problem. NASA TMX-3511: 169-172.
- Baker, V. R. 1977. Morphology of the martian outflow channels. Geological Society of America Abstracts with Programs 9/7: 887.
- Baker, V. R. 1977. Lake Missoula flooding and the Channeled Scabland. IN: Geological Excursions in the Pacific Northwest (E. H. Brown and R. C. Ellis, eds.). Guidebook for the Geological Society of America 1977 Annual Meeting, Dept. Geology, Western Washington University, 399-414.
- Baker, V. R. 1978. The Spokane Flood controversy. IN: The Channeled Scabland (V. R. Baker and D. Nummedal, eds.). NASA Special Publication in press.
- Baker, V. R. 1978. Quaternary Geology of the Channeled Scabland. IN: The Channeled Scabland (V. R. Baker and D. Nummedal, eds.). NASA Special Publication in press.
- Baker, V. R. 1978. Paleohydraulics and hydrodynamics of scabland floods. IN: The Channeled Scabland (V. R. Baker and D. Nummedal, eds.). NASA Special Publication in press.
- Baker, V. R. 1978. Large-scale erosional and depositional features of the Channeled Scabland. IN: The Channeled Scabland (V. R. Baker and D. Nummedal, eds.). NASA Special Publication in press.
- Baker, V. R. 1978. A preliminary assessment of the dynamic erosional processes that shaped the martian outflow channels. Abstracts of the 9th Lunar and Planetary Conference, Houston, Texas.
- Baker, V. R. 1978. Reconstructing Ancient Floods on Mars and Earth. Abstracts of the 1978 Quaternary Seminar, Quaternary Research Center, University of Washington, Seattle, Washington.
- Baker, V. R. Hydrodynamics of erosion by catastrophic floods. Submitted to the 1978 Planetary Geology Principal Investigators' Conference, Tucson, Arizona.
- Baker, V. R. and R. C. Kochel. Morphometry of streamlined erosional forms in Terrestrial and martian channels. Submitted to the 1978 Planetary Geology Principal Investigators' Conference, Tucson, Arizona.

- Baker, V. R. and R. C. Kochel. 1978. Morphological mapping of martian out-flow channels. Abstracts of the 9th Lunar and Planetary Conference, Houston, Texas.
- Boothroyd, J. C., Simpson, E. J. and Nummedal, D., 1976, Possible earth analogs for some Martian channel features: NASA Tech. Memo X-3364, p. 68.
- Brown, P. J., Nummedal, D., Eppler, D. T., and Ehrlich, R., 1977, Characterization of erosional forms on Mars by Fourier analysis in closed form (abs.): Reports of the Planetary Geology Program, 1976-1977, NASA Technical Memorandum TM X-3511, p. 166-167.
- Carr, M. H. 1977. Martian fluvial features. Proceedings Eighth Annual Meeting, Division Planetary Science, American Astronomical Society.
- Carr, M. H. 1978. Martian Channels. Scientific American in press.
- Carr, M. H., and G. G. Schaber. 1977. Martian permafrost features. Journal of Geophysical Research 87:4039-4065.
- M. Coradini, R. Bianchi. "Permafrost on Mars." NASA TM X-3511 - NASA Washington, D.C., May 1977, pag. 109.
- Malin, M. C. 1977. Mechanisms for the formation of Martian channels. (Abstract). Bull. Am. Astro. Soc. 9(3), 449.
- Malin, M. C. 1976. Age of Martian Channels. Jour. Geophys. Res., 81, 4825-4845.
- Masursky, Harold, J. M. Boyce, A. L. Dial, G. G. Schaber, and M. E. Strobell. 1977. Classification and time of formation of martian channels based on Viking data. Journal of Geophysical Research 82/28:4016-4039.
- Masursky, Harold, J. M. Boyce, A. L. Dial, G. G. Schaber, and M. E. Strobell. 1977. Martian channels - classification by morphology and time of formation. IN: Reports of Planetary Geology Program, 1976-1977. NASA TMX-3511.
- Nummedal, D., 1976, Fluvial erosion on Mars - A review: in Proc., Coll. on water in Planetary Regoliths, Hanover, N.H., p. 47-54.
- Nummedal, D. and Boothroyd, J. C., 1976, Fourier analysis of landforms: A comparison of features in the Washington Scablands and selected erosional forms on Mars: NASA Tech. Memo. X-3364, p. 148.
- Nummedal, D., Gonsiewski, J. J. and Boothroyd, J. C., 1976, Geological significance of large channels on Mars: Geologica Romana.

- Nummedal, D., 1977, Entrainment of sediment by fluid flows on Mars: NASA Tech. Memo. X-3511, p. 162-164.
- Patton, P. C. and V. R. Baker. 1978. Origin of the Cheney-Palouse scabland tract. IN: The Channeled Scabland (V. R. Baker and D. Nummedal, eds.). NASA Special Publication in press.
- Patton, P. C. and V. R. Baker. New evidence for pre-Wisconsinan flooding in the Channeled Scabland of eastern Washington. Submitted to Geology.
- Sagan, C. . 1977. Preliminary Investigations of the Physics of Martian Channels, Abstract in "Reports of Accomplishments of Planetology Programs, 1975-76", NASA TM X-3364.
- Sagan, C. and D. Wallace. 1977. Evaporation of Ice-Choked Rivers: Application to Martian Channels, in preparation. Abstract in "Reports of Planetary Geology Program, 1976-1977," NASA TM X-3511.

MARS GEOLOGICAL MAPPING

- Carr, M. H. 1976. Geologic map of the Tharsis quadrangle of Mars. U.S. Geological Survey Miscellaneous Investigation Map I-893.
- Condit, C. D., and L. A. Soderblom. 1978. Geologic map of the Mare Australe area of Mars. U.S. Geological Survey Miscellaneous Investigation Map I-1976 in press.
- Condit, C. D., and L. A. Soderblom. 1977. Geologic map of the Mare Australe area of Mars. IN: Reports of Planetary Geology Program, 1976-1977. NASA TMX-3511.
- De Hon, R. A. 1977. Geologic map of the Eridania Quadrangle of Mars. U.S. Geol. Survey Misc. Inv. Map I-1008.
- Greeley, R. and J. E. Guest. 1978. Geological Map of the Casius Quadrangle of Mars (MC6) U.S. Geol. Survey, in Press.
- Hiller, K. 1978. Geologic map of the Amenthes Quadrangle of Mars: U.S. Geol.. Survey Misc. Inv. Series Map in press.
- King, E. A. 1978. Geologic map of the Mare Tyrrhenum Quadrangle (MC-22) Mars. U.S. Geological Survey, Miscellaneous Map Series, in press.
- King, John S., 1976, Geologic map of the Arabia quadrangle of Mars, USGS Map I-996.
- Lucchitta, B. K. 1977. Geology of the Ismenius Lacus quadrangle (MC-5), Mars. IN: Reports of Planetary Geology Program, 1976-1977. NASA TMX-3511.
- Lucchitta, B. K. 1978. Geologic map of the Ismenius Lacus quadrangle, Mars, scale 1:5,000,000. U.S. Geological Survey Miscellaneous Investigation Map I-1065 in press.
- Masursky, Harold, A. L. Dial, and M. E. Strobell. 1977. Geologic map of the Phoenicis Lacus quadrangle of Mars (MC-17). IN: Reports of Planetary Geology Program, 1976-1977. NASA TMX-3511.
- Masursky, Harold, A. L. Dial, and M. E. Strobell. 1978. Geologic map of the Phoenicis Lacus Region of Mars. U.S. Geological Survey Miscellaneous Investigation Map I-896 in press.
- McCauley, J. F. 1978. Geologic map of the Coprates quadrangle of Mars. U.S. Geological Survey Miscellaneous Investigation Map I-897 in press.
- Meyer, J. D. and M. J. Grolier, 1977. Geologic map of the Syrtis Major quadrangle of Mars. U.S. Geological Survey.

- Morris, E. C. and S. E. Dwornik. 1977. Geologic map of the Amazonis quadrangle of Mars (MC-8). IN: Reports of Planetary Geology Program, 1976-1977. NASA TMX-3511.
- Morris, E. C. and S. E. Dwornik. 1978. Geologic map of the Amazonis quadrangle of Mars. U.S. Geological Survey Miscellaneous Investigation Map I-1049 in press.
- Peterson, J. E. 1977. Geologic Map of the Noachis quadrangle of Mars. U.S. Geological Survey Miscellaneous Investigations Map I-910.
- Potter, D. B. 1976. Geologic Map of the Hellas Quadrangle (MC-28) of Mars, U.S.G.S. Misc. Investigation Series.
- Schaber, G. G. 1977. Geologic map of the Iapygia quadrangle of Mars. U.S. Geological Survey Miscellaneous Investigation Map I-1020.
- Schaber, G. G. 1977. Geologic map of the Iapygia quadrangle of Mars. IN: Reports of Planetary Geology Program 1976-1977. NASA TMX-3511.
- Schaber, G. G. 1977. Geology of the Iapygia quadrangle of Mars. IN: Reports of Planetary Geology Program, 1976-1977. NASA TMX-3511.
- Scott, D. H., and M. H. Carr. 1976. Geologic map of Mars, 1:25 million scale. U.S. Geological Survey Miscellaneous Investigation Map, U.S.G.S. Open file report 76-573.
- Scott, D. H. 1977. Mars geologic mapping. IN: Reports of Planetary Geology Program, 1976-1977. NASA TMX-3511.
- Scott, D. H., and E. C. Morris. 1977. Geology of the Aeolis quadrangle of Mars. IN: Reports of Planetary Geology Program, 1976-1977. NASA TMX-3511.
- Scott, D. H., E. C. Morris, and M. N. West. 1977. Geologic map of the Aeolis quadrangle of Mars. U.S. Geological Survey Miscellaneous Investigation Map I-1111 in press.
- Scott, D. H. 1978. Mars geologic mapping. NASA TMX in press.
- Scott, D. H., and M. H. Carr. 1978. Geologic map of Mars, 1:25 million scale. U.S. Geological Survey Miscellaneous Investigation Map I-1083 in press.

MERCURY GEOLOGICAL MAPPING

- Boyce, J. M., and M. J. Grolier. 1977. The geology of the Goethe (H-1) quadrangle of Mercury. IN: Reports of Planetary Geology Program, 1976-1977. NASA TMX-3511.
- Davies, M. E., S. E. Dwornik, D. E. Gault, R. G. Strom 1976. Atlas of Mercury. NASA Publication.
- Dehon, René A., David H. Scott, and James R. Underwood, Jr., 1978. Geologic history of Kuiper Quadrangle, Mercury. Geol. Soc. America Abstracts with Programs for 1978 10/1: 4.
- De Hon, R. A., D. H. Scott, J. R. Underwood Jr. 1977. The geology of the Kuiper Quadrangle of Mercury. NASA Tech. Mem. X-3511, p. 242-244.
- Greeley, R., J. E. Guest and D. E. Gault, 1977. Geological Mapping of Mercury Quadrangle H3 (Shakespeare) and H4. NASA TMX-3511, 238.
- Holt, H. E. 1976. Mercury geologic mapping program. IN: Reports of Accomplishments of Planetology Programs 1975-1976. NASA TMX-3364.
- Holt, H. E. 1977. Mercury geologic mapping program. IN: Reports of Planetary Geology Program, 1976-1977. NASA TMX-3511.
- Holt, H. E. 1977. Mercury geologic mapping program. Proceedings Eighth Annual Meeting Division Planetary Science, American Astronomical Society, 16.
- King, E. A. 1977. Geologic mapping of the Victoria Quadrangle (H-2) Mercury. Abstract in NASA TM X-3511, 239.
- Malin, M. C. 1977. Geologic mapping of Bach (South Polar) quadrangle, Mercury: A progress report. (Abstract). Reports of Planetary Geology Program 1976-1977. NASA TM X-3511, 247.
- Schaber, G. G., and J. F. McCauley. 1977. Geology of the Tolstoj (H-8) quadrangle of Mercury. IN: Reports of the Planetary Geology Program, 1976-1977. NASA TMX-3511.
- Scott, D. H., R. A. Dehon, and J. R. Underwood, Jr., 1976. The Geology of the Kuiper Quadrangle of Mercury. IN: Papers Presented to the Conference on Comparisons of Mercury and the Moon. Lunar Sci. Institute Pub. 262: 31.
- Strom, R. G. 1977. Geologic map of Mercury Quadrangle "Bach" (H-15), in review.
- Trask, N. J. and D. Dzurisin. 1978. Geologic Map of Discovery Quadrangle, Mercury. In review.

PLANETARY CARTOGRAPHY

- Arthur, D. W. G. 1976. The Nix Olympica problem: an exercise in planetary photogrammetry. Photogrammetric Record 8/47:617-629.
- Arthur, D. W. G. 1977. The limitations of narrow-angle convergent pairs. Photogrammetric Engineering and Remote Sensing 43/12:1511-1514.
- Arthur, D. W. G. 1978. A note on orthogonal transformation. The American Cartographer in press.
- Arthur, D. W. G., and D. K. McMacken. 1977. Planimetric martian triangulations. Photogrammetric Engineering and Remote Sensing 43/6:701-707.
- Batson, R. M. 1976. Cartography of Mars: 1975. The American Cartographer 3/1:57-63.
- Batson, R. M. 1976. Multi-dimensional maps through digital image processing. Proc. International Symposium on Computer Assisted Cartography, Reston, Va.
- Batson, R. M. 1977. Mars 1:5,000,000 mapping. IN: Reports of Planetary Geology Program, 1976-1977. NASA TMX-3511.
- Batson, R. M. and J. L. Inge. 1976. Albedo Boundaries on Mars in 1972: Results from Mariner 9. Icarus 27/3:531-536.
- Batson, R. M. 1977. Shaded relief map of Mercury. IN: Reports of Planetary Geology Program, 1976-1977. NASA TMX-3511.
- Batson, R. M. 1978. Planetary mapping with the airbrush. Sky and Telescope 55/2:109-112.
- Batson, R. M., and D. W. G. Arthur. 1976. Geodesy and cartography, Chapter V. IN: A geological basis for the exploration of the planets. NASA Special Publication 417.
- Batson, R. M., Kathleen Edwards, and E. M. Eliason. 1976. Synthetic stereo and landsat pictures. Photogrammetric Engineering and Remote Sensing 42/10:1279-1284.
- Davies, M. E. and F. Y. Katayama. 1976. The control net of Mercury: November 1976. Rand Corporation report R-2089-NASA, November 1976.
- Davies, M. E., F. Y. Katayama, and J. A. Roth. 1976. Control point measurements on Mariner 10 pictures of Mercury. Rand Corporation report R-2090-NASA, November 1976.
- Davies, M. E. and J. A. Roth. 1976. Identification of control points on Mercury. Rand Corporation report R-2091-NASA, November 1976.

- Davies, M. E. 1977. The prime meridians of Mars and the longitudes of the Viking landers. Science, Vol. 197, p. 1277, 23 September 1977.
- Davies, M. E. 1978. The control net of Mars: May 1977. Journal of Geophysical Research in press.
- Davies, M. E. Mariner Mars missions. IN: Chapter XVII, Satellite Photogrammetry, fourth edition, Manual of Photogrammetry, American Society of Photogrammetry, to be published.
- Inge, J. L., and P. M. Bridges. 1976. Applied photointerpretation for airbrush cartography. IN: Photogrammetric Engineering and Remote Sensing 42/6:749-760.
- Wu, S. S. C. 1976. Stereo mapping with the Viking lander camera imagery. Congress of the International Society for Photogrammetry XIII.
- Wu, S. S. C. 1977. Mars synthetic topographic mapping. Icarus in press.
- Wu, S. S. C. 1977. Mars topographic mapping. IN: Abstracts Book, the XV International Congress on Surveying and Mapping, Stockholm, Sweden.
- Wu, S. S. C. 1978. Stereo mapping with side-looking radar imagery. The International Symposium on the Problems of the Accuracy Improvement of Photogrammetric Models; International Society for Photogrammetry, Commission III, Moscow, USSR in press.

INSTRUMENT DEVELOPMENT AND TECHNIQUES

- Albee, A. L., J. R. Anderson, and A. A. Chodos. 1976. Operational and instrumental considerations for the development of a planetary SEM-EDA. Eleventh National Annual Conference of the Microbeam Analysis Society, Miami Beach, Florida.
- Albee, A. L., J. R. Anderson, and A. A. Chodos. 1977. Scientific rational and feasibility of developing a planetary SEM-EDA. Abs., from Reports of Accomplishments of Planetology Programs, 1975-1976, p. 78-80 (NASA TM X-3364).
- Albee, A. L., D. W. Beaty, A. A. Chodos, and J. E. Quick. 1977. Quantitative measurement of petrographic properties by computer-controlled energy-dispersive analysis. Abs., GSA 1977 Annual meeting, Seattle, Washington.
- Albee, A. L., D. W. Beaty, A. A. Chodos, and J. E. Quick. (In press). Quantitative analysis of petrographic properties and of mineral compositions with a computer-controlled energy-dispersive system. Transactions of the 1977 International Conference on X-ray Optics and Microanalysis.
- Anderson, D. M., J. B. Stephens, F. P. Fanale, and A. R. Tice. 1977. Mars Soil-Water Analyzer: Instrument Description and Status. IN: Reports of Planetary Geology Program 1976-1977, p. 260-266. NASA TM X-3511.
- Baird, A. K., Castro, A. J., Clark, B. C., Toulmin, Priestley, III, Rose, H. J., Jr., Keil, Klaus, and Gooding, J. L.; 1977, Viking X-ray experiment: sampling strategies and laboratory simulations: Jour. Geoph. Res., v. 82, p. 4595-4624.
- Baird, A. K., Castro, A. J., Clark, B. C., Toulmin, P., III, Rose, H., Keil, K., Gooding, J. L., 1977, Viking X-ray fluorescence experiment - sampling Strategies and Laboratory Simulations (ABS): Am. Geophys. Union Trans., 58, p. 829.
- Baird, A. K., A. J. Castro, B. C. Clark, P. Toulmin III, H. Rose, Jr., K. Keil, and J. L. Gooding. 1977. The Viking x-ray fluorescence experiment: Sampling strategies and laboratory simulations. J. Geophys. Res. 82/28:4595-4624.
- Baird, A. K., Toulmin, P. III, Clark, B. C., Rose, H. J. Jr., Keil, K., Christian, R. P., Gooding, J. L., 1976, Mineralogic/petrologic implications of Viking geochemical results from Mars: Interim report: Science, v. 194, no. 4271, p. 1288-1293.
- Baird, A. K., Toulmin, Priestley, III, Clark, B. C., Rose, H. J., Jr., Keil, Klaus, and Gooding, J. L., 1977, Mineralogic/petrologic implications of Viking geochemical results from Mars: interim report (abs.): American Astronomical Society, Division of Planetary Sciences, Program Eighth Annual Meeting, p. 6.

- Biemann, K., Anderson, D. M., Orgel, L., Oro, J., Simmonds, P., Toulmin, P., III, 1977, The search for organic and inorganic volatile compounds in the surface of Mars by Viking I and II (abs.): Program XX Annual COSPAR Meeting, Tel-Aviv, Israel.
- Biemann, K., Oro, J., Toulmin, Priestley III, Orgel, L. E., Nier, A. O., Anderson, D. M., Simmonds, P. G., Flory, D., Diaz, A. V., Rushneck, D. R., and Biller, J. A., 1976, Search for organic and volatile inorganic compounds in two surface samples from the Chryse Planitia region of Mars: *Science*, v. 194, pp. 72-76.
- Biemann, K., Oro, J., Toulmin, Priestley, III, Orgel, L. E., Nier, A. O., Anderson, D. M., Simmonds, P. G., Flory, D., Diaz, A. V., Rushneck, D. R., Biller, J. E., and La Fleur, A.L., 1977, The search for organic substances and inorganic volatile compounds in the surface of Mars: *Jour. Geoph. Res.*, v. 82, p. 4641-4658.
- Biemann, Klaus, Owen, Tobias, Oro, John, Toulmin, Priestley, III, Orgel, L. E., Near, A. O., Anderson, D. M., Simmonds, P. G., Flory, Don, Diaz, A. V., Rushneck, D. R., Biller, J. E., Howarth, Donald, and La Fleur, Arthur, 1977, Results from the molecular analysis experiment (abs.): American Astronomical Society, Division of Planetary Sciences, Program Eighth Annual Meeting, p. 6.
- Berlin, G. L., J. R. Ambler, R. H. Hevly, and G. G. Schaber. 1977. Sinagua agricultural plots revealed by aerial thermography, soil chemistry, pollen/plant analysis and archaeology. *American Antiquity* 42/4:588-600.
- Boyce, J. M., A. L. Dial, and H. Masursky. 1976. The optimal sun angle for obtaining photographs of martian surface features from orbit. U.S. Geological Survey Interagency Report - Astrogeology 78.
- Chodos, A. A., A. L. Albee and J. E. Quick. 1978. The use of energy dispersive analysis for the study of phase aggregates. Abs., Twelfth National Conference on Electron Probe Analysis, Boston, Mass.
- Clark, B. C. 1978. Implications of abundant hygroscopic minerals in the Martian regolith. *Icarus* in press.
- Clark, B. C., Baird, A. K., Toulmin, P. III, Rose, H. J. Jr., and Keil, K., 1978, Martian surface materials: sample chemical differences and the trace-element problem (abs.): Program, Ninth Lunar Science Conference, in press.
- Clark, B. C., A. K. Baird, H. J. Rose, P. Toulmin III, K. Keil, A. J. Castro, W. C. Kelliher, C. D. Rowe, and P. H. Evans. 1976. Inorganic analyses of Martian surface samples at the Viking landing sites. *Science* 194:1283-1288.

- Clark, B. C., A. K. Baird, P. Toulmin III, H. J. Rose, and K. Keil. 1977. X-ray fluorescence geochemical analysis on the surface of Mars. IN: Nuclear Methods in Minerals Exploration. (J. G. Morse, ed.). Elsevier Scientific Publ. Co., Amsterdam.
- Clark, B. C., Baird, A. K., Toulmin, P. III, Rose, H. J., Jr., and Keil, K., 1977, X-ray fluorescence geochemical analysis on the surface of Mars: Chapter 4 in Morse, J. G., ed., Nuclear methods in mineral exploration and production, New York, Elsevier, 280 pp (pp. 93-112).
- Clark, B. C., Baird, A. K., Toulmin, P., III, Rose, H. J., Jr., Keil, K.; 1977, Chemical heterogeneity among soil and crust samples from each of the Viking landing sites (abs.): American Astronomical Society, Division of Planetary Sciences, Program, Boston Meeting October 1977.
- Clark, B. C., Baird, A. K., Rose, Harry J. Jr., Toulmin, P. III, Keil, K., Castro, A. J., Kelliher, W. C., Rowe, C. D., Evans, P. H., 1976, Inorganic analyses of Martian surface samples at the Viking landing sites: Science, v. 194, no. 4271, p. 1283-1288.
- Clark, B. C., Baird, A. K., Rose, H. J., Jr., Toulmin, Priestley, III, Keil, Klaus, Castro, Angelo, and Kelliher, W. C., 1977, Inorganic analyses of Martian surface samples by X-ray fluorescence spectrometry (abs.): American Astronomical Society, Division of Planetary Sciences, Program Eighth Annual Meeting, p. 6.
- Clark, B. C., Baird, A. K., Rose, H. J., Toulmin, P., III, Christian, R. P., Kelliher, W. C., Castro, A. J., Rowe, C. D., Keil, K., and Huss, G. R.; 1977, Viking X-ray fluorescence experiment - analytical methods and early Results (ABS): Am. Geophys. Union Trans., 58, p. 829.
- Clark, B. C., P. Toulmin III, A. K. Baird, K. Keil, and H. J. Rose. 1976. Argon content of the Martian atmosphere at the Viking 1 landing site: Analysis by x-ray fluorescence spectroscopy. Science 193:804-805.
- Clark, B. C., Toulmin, P. III, Baird, A. K., Keil, K., Rose, Harry J. Jr., 1976, Argon content of the Martian atmosphere at the Viking 1 landing site: Analysis by X-ray fluorescence spectroscopy: Science, v. 193, no. 4255, p. 804-805.
- Clark, B. C., A. K. Baird, H. J. Rose, P. Toulmin III, R. P. Christian, W. C. Kelliher, C. D. Rowe, K. Keil, and G. R. Huss. 1977. The Viking x-ray fluorescence spectrometer: Early results. J. Geophys. Res. 82/28:4577-4594.
- Clark, B. C., Baird, A. K., Rose, H. J., Jr., Toulmin, Priestley, III, Christian, R. P., Kelliher, W. C., Castro, A. J., Rowe, C. D., Keil,

- Klaus, and Huss, G. R., 1977, The Viking X-ray fluorescence experiment: analytical methods and early results: Jour. Geoph. Res., v. 82, p. 4577-4594.
- Economou, T. E., and A. L. Turkevich, 1976, An Alpha Particle Instrument with Alpha, Proton, and X-Ray Modes for Planetary Chemical Analyses, Nuclear Instr. and Methods 134, 391-400.
- Greeley, R., and T. E. Bunch, 1976. Basalt models for the Mars Penetrator Mission: Geology of the Amboy lava field, California. NASA Tm X-73125, 56 pgs.
- Guest, J. E. and J. B. Murray, 1977. Studies of vertical ground deformation by precise levelling techniques. United Kingdom Research on Mount Etna 1975-1976, The Royal Society (Eds. A. T. Huntingdon, G. P. L. Walker and C. R. Argent) pp 13-14.
- Haines, E. L., J. R. Arnold, and A. E. Metzger. 1976. Chemical Mapping of Planetary Surfaces. IEEE Transactions on Geoscience Electronics GE-14/3:141-153.
- R. Henry, W. Fastie, R. Lucke and B. Hapke. 1976. A Far Ultraviolet Photometer for Planetary Surface Analysis. The Moon, 15, 51-65.
- B. Hapke, 1978. Bi-directional Reflectance Spectroscopy. I. Theory. Submitted to J. Geophys. Res.
- B. Hapke and E. Wells. 1978. Bi-directional Reflectance Spectroscopy. II. Experiments and Observations. Submitted to J. Geophys. Res.
- Huck, F. O., Jobson, D. J., Park, S. K., Wall, S. D., Arvidson, R. E., Patterson, W. R., and Benton, W. D. (1977) Spectrophotometric and color estimates of the Viking lander sites: Journal of Geophysical Research, 82:28, 4401.
- Leberl, F. and C. Elachi, "Mapping with Satellite Side-Looking Radar," GDTA, Presented at GDTA Remote Sensing Meeting, France, Sept. 21, 1977.
- Levinthal, E. C., Green, W., Jones, K. L., and Tucker, R. (1977) Processing the Viking lander camera data: Journal of Geophysical Research, 82:28, 4412.
- Liebes, S. and Schwartz, A. A. (1977) Viking 1975 Mars lander interactive computerized video stereophotogrammetry system: Journal of Geophysical Research, 82:28, 4421.
- Masursky, Harold, S. A. Collins, G. E. Danielson, David Norris, T. J. Reilly, T. E. Thorpe, John Wellman, J. A. Cutts, B. A. Smith, and N. J. Trask. 1976. Planetary imaging: Past, present, and future.

Geoscience Transactions, IEEE Transactions on Geoscience Electronics, Vol. G.E. 14, NO. 3, 122-134.

- McCord, T. B., and M. J. Gaffey. 1977. The use of ground based telescopes in determining the composition of the surfaces of solar system objects. Proceedings of Soviet-American Conference on Cosmochemistry of the Moon and Planets, NASA SP-370, Part 2, 893-922.
- McCord, T. B., J. B. Adams, and R. L. Huguenin. 1978. "Reflection Spectroscopy: A Technique for Remotely Sensing Surface Mineralogy and Composition," in Orbital Science, NASA SP (in press).
- McCord, T. B., J. B. Adams, and R. L. Huguenin. 1978. Reflection spectroscopy: A technique for remotely sensing surface mineralogy and composition. Submitted to Space Science Reviews.
- Metzger, A. 1976. Gamma-Ray Spectroscopy. IN: A Geological Basis for the Exploration of the Planets, p. 50-51. NASA SP-417.
- Metzger, A. 1976. X-Ray Spectroscopy. IN: A Geological Basis for the Exploration of the Planets, p. 51-52. NASA SP-417.
- Metzger, A. E., J. B. Willett, and H. W. Schnopper. 1977. An X-Ray Diffractometer for Mars. IN: Reports of Planetary Geology Program 1976-1977, p. 255-257. NASA TM-X-3511.
- Metzger, A. E., J. R. Arnold, and R. H. Parker, "The Detection of H₂O on the Moon and Mars by Orbital Gamma-Ray Spectroscopy," Proc. on Colloquium on Water in Planetary Regoliths. Hanover, NH, p. 143-148, 1977.
- Metzger, A. E., J. B. Willett, H. W. Schnopper, "An X-ray Diffractometer for Mars," Eighth Planetary Geology Principal Investigator's Meeting, 1977, May 23-26, St. Louis, MO.
- Parker, R. H., and A. E. Metzger, "The Detection of H₂O by Subsurface Gamma-Ray Spectroscopy," Proc. on Colloquium on Water in Planetary Regoliths, Hanover, NH, p. 107-112, 1977.
- Parker, R. H., J. L. Luthey and A. E. Metzger, "Application of Nuclear Techniques for measurements near Jupiter," Trans of the American Nuclear Society, Nov. 1977, p. 193.
- Patterson, W. R., Huck, F. O., Wall, S. D., and Wolf, M. R. (1977) Calibration and performance of the Viking lander cameras: Journal of Geophysical Research, 82:28, 4391.
- Pehl, R. H., Varnell, L. S., and A. E. Metzger, High Energy Proton Radiation Damage of High-Purity Germanium Detectors. IEEE Trans. on Nucl. Sci., Feb. 1978.

- Sung, C. M., R. B. Singer, K. M. Parkin, M. Osborne, and R. G. Burns.
1977. Temperature dependence of Fe^{2+} crystal field spectra: Implications to mineralogical mapping of planetary surfaces. Proceedings of the Eighth Lunar Science Conference, 1063-1079.
- Tepper, L. and Hapke, B. 1978. Mercury: Detection of a 1000nm Ferrous Band. Submitted to Science.
- Turkevich, A. L., T. E. Economou, And E. J. Franzgrote, 1976, Report on Status of Alpha Particle Instrument with Alpha, Proton and X-Ray Modes for a Penetrator-Type Mission, NASA TMX-73, 181, pp. 42-58.
- Turkevich, A. L., T. E. Economou, and E. J. Franzgrote, Adaptation of the Alpha Particle Instrument for Penetrator Missions, 1977, NASA TMX-3511, pp. 258-259.
- Turkevich, A. L. and T. E. Economou, 1978, Experiments on Hard Landers, Prepared for Presentation at Asteroid Workshop, January 19-21, 1978, Chicago, Illinois, Submitted for Publication on NASA STX-Document.

AUTHOR—EDITOR INDEX

A

Abrams, M.J.	36
Adams, J.B.	29, 34, 97
A'Hearn, M.	14
Ajello, J.M.	19
Albee, A.L.	93, 94
Alfvén, H.	5, 25
Allen, C.C.	49, 59
Ambler, J.R.	94
Anderson, D.L.	23
Anderson, D.M.	93, 94
Anderson, J.R.	93
Andrews, S.	67
Argent, C.R.	61, 62, 96
Arnold, J.R.	12, 96, 97
Arrhenius, G.	5
Arthur, D.W.G.	62, 89
Arvidson, R.E.	29, 34, 39, 43, 49, 67, 68, 96
Atvidson, R.E.	30
Aubele, J.C.	59, 60

B

Baird, A.K.	29, 35, 44, 93, 94, 95
Baker, V.R.	75, 76, 77
Banerdt, W.B.	23
Barnes, V.E.	29
Barshay, S.	33
Batson, R.M.	89
Baum, W.A.	30
Beaty, D.W.	93
Benton, M.J.S.	5
Benton, W.D.	34, 96
Berlin, G.L.	41, 94
Bianchi, R.	30, 76
Biemann, K.	94
Biermann, L.	38
Biller, J.E.	94
Binder, A.B.	29, 39
Black, D.C.	7, 63
Blasius, K.R.	29, 30, 31, 37, 59, 60

Bodenheimer, P.	7
Bolle, H.J.	38
Boothroyd, J.C.	76
Bornmann, P.	8
Boss, A.P.	23
Boyce, J.M.	23, 24, 49, 53, 76, 85, 94
Bragg, S.	29, 30
Brandt, J.C.	5
Breed, C.S.	67, 69, 70
Breed, W.J.	67
Bridges, P.M.	90
Briggs, G.A.	30, 31, 43
Brookins, D.G.	59
Brown, E.H.	75
Brown, P.J.	76
Brown, W.E., Jr.	41
Bryan, M.L.	32
Bücker, H.	38
Bunch, T.E.	96
Burgess, E.	39
Burlaga, L.F.	5
Burmeier, T.L.	59
Burns, J.A.	5, 20, 32, 63
Burns, R.G.	98
Bus, S.J.	5, 8, 9, 10, 11, 13
Butler, J.C.	35
Butterworth, P.S.	33, 62

C

Cameron, A.G.W.	5, 7
Campbell, D.B.	43, 45
Cannon, W.A.	32
Caputo, C.	49
Carlqvist, Per	5
Carlston, C.E.	40, 67
Carr, G.P.	70
Carr, M.H.	6, 29, 30, 31, 33, 37, 41, 45, 49, 59, 60, 68, 76, 81, 82
Carter, W.D.	69
Carusi, A.	5, 6, 49, 67

Casacchia, R.49, 50
 Cassen, P.23, 24, 30, 32
 Castro, A.J.93, 94, 95
 Cavarretta, G.49
 Champion, D.D.59
 Chao, J.K.9
 Chapman, C.R.6, 7, 50
 Charette, M.P.43
 Chase, S.C., Jr.35
 Chiang, E.30
 Chodos, A.A.93, 94
 Christensen, P.R.35
 Christian, R.P.29, 44, 93, 94, 95
 Cintala, M.J.19, 50, 51, 55
 Clark, B.C.29, 35, 44, 93, 94, 95
 Clark, L.V.39
 Clark, R.38
 Clifton, K.S.11, 15
 Colburn, D.40
 Collins, S.A.96
 Condit, C.D.42, 50, 81
 Conel, J.E.36
 Cook, A.F.43
 Cooke, G.N.36
 Coradini, A.6, 7, 8, 31, 32
 Coradini, M.30, 32, 49, 67, 76
 Cordell, B.M.31, 67
 Cotera, A.S.67, 69
 Crater Analysis Techniques
 Working Group50
 Crouch, D.S.39
 Crumpler, L.S.49, 59, 60
 Cutts, J.A.19, 29, 30, 31, 33, 37, 49, 96
 Cuzzi, J.45

D

D'Alli, R.E.31
 Danielson, G.E.43, 96
 Davies, M.E.43, 85, 89, 90
 Davis, D.R.6, 7
 DeCampi, W.M.7
 Dehon, R.A.50, 81, 85
 Delsemme, A.H.5, 6, 11, 12, 13, 14
 Dermott, S.33
 Dial, A.L. Jr.37, 50, 76, 81, 94
 Diaz, A.V.94
 Diaz, J.M.42
 Dohnanyi, J.S.52
 Donn, B.14
 Downs, G.S.45
 Drake, J.9

Dubin, E.M.7
 Duke, M.B.12
 Duxbury, T.C.19, 20, 30
 Dwornik, S.E.82, 85
 Dzurisin, D.31, 32, 38, 52, 85

E

Economou, T.E.96, 98
 Edwards, K.43, 89
 Ehrlich, R.50, 51, 76
 Elachi, C.32, 36, 37, 40, 41, 53, 63, 96
 El-Baz, Farouk67
 Eliason, E.M.43, 89
 Ellis, R.C.75
 Elsasser, H.14
 Elston, W.E.59, 60
 England, A.W.45
 Eppler, D.T.50, 51, 59, 76
 Ericksen, G.E.68
 Esposito, P.32
 Evans, D.36
 Evans, P.H.44, 94, 95
 Everhart, E.10

F

Fanale, F.P.10, 19, 32, 93
 Fanucci, O.7
 Fastie, W.96
 Fechtig, H.5, 10, 14, 38, 52, 53
 Federico, C.6, 7, 67
 Fegley, M.B., Jr.19
 Fenner, R.G.41
 Fjeldbo, G.32
 Flory, D.94
 Franzgrote, E.J.98
 Fryberger, S.G.67, 70
 Fulchignoni, M.7, 8, 30, 31, 32, 49, 50,
 51, 67, 68
 Funiciello, R.67

G

Gad-el-Hak, M.68
 Gaffey, M.J.7, 8, 97
 Gary, G.A.11, 15
 Gault, D.E.32, 37, 51, 53, 54, 85
 Gavrishin, A.I.7, 8, 31, 32
 Gebel, D.67
 Gehrels, T.5
 Gentner, W.10, 52
 Gibson, J.5

Gibson, M.S.	42
Gillett, S.L.	12
Goettel, K.	29, 32, 33
Goldstein, R.M.	33, 41
Golombek, M.P.	33
Gonsiewski, J.J.	76
Gooding, J.L.	29, 93
Gougin, J.	19
Greeley, R.	6, 29, 30, 31, 33, 37, 39, 40, 41, 43, 44, 45, 49, 51, 53, 54, 59, 60, 61, 62, 63, 64, 68, 69, 70, 71, 81, 85, 96
Green, R.R.	33, 41, 45
Green, W.	96
Greenberg, R.	6
Grolier, M.J.	68, 69, 71, 81, 85
Guest, J.E.	29, 30, 33, 36, 37, 49, 51, 59, 60, 61, 62, 64, 81, 85, 96
Guinness, E.A.	29, 39, 49, 67

H

Haberle, R.	70
Haines, E.L.	96
Hanner, M.	5
Hapke, B.	19, 33, 96, 98
Harrington, R.	14
Hartnell, J.A.	54
Hawke, B.R.	51
Head, J.W. III	19, 33, 34, 35, 39, 45, 50, 51, 55, 61
Helin, E.F.	7, 8, 9, 10, 12, 13
Henry, R.	96
Herbert, F.	9, 14
Heubner, W.F.	14
Hevly, R.H.	94
Hiller, K.	53, 81
Hodges, C.A.	34, 51
Hohenberg, C.	29
Holt, H.E.	37, 59, 85
Horn, P.	52
Horneck, G.	38
Horstman, K.	67
Howard, A.D.	68, 69
Howard, H.T.	32, 43, 45, 54
Howarth, D.	94
Hsui, A.T.	23, 25
Hubbard, N.J.	25
Huck, F.O.	34, 96, 97
Huguenin, R.L.	29, 34, 35, 38, 43, 97
Hunger, J.	40
Hunt, G.E.	43
Hunter, D.M.	34

Huntingdon, A.T.	61, 62, 96
Huss, G.R.	95, 96
Hutton, R.E.	39, 42

I

Inge, J.L.	89, 90
Ip, W.H.	9
Isaacman, R.	11
Iversen, J.D.	61, 68, 69, 70, 71

J

Jackson, W.	14
Jakosky, B.M.	35
Jappel, A.	12
Jobson, D.J.	34, 96
Johannesen, D.	68
Johnson, G.L.	38
Johnson, T.V.	8, 10, 32, 38
Johnston, D.H.	23, 25
Jones, K.L.	39, 50, 67, 96

K

Kahn, R.	40
Karlo, J.F.	61, 62
Katayama, F.Y.	89
Kaula, W.M.	35, 37
Keil, K.	29, 35, 44, 93, 94, 95
Kelliher, W.C.	44, 94, 95
Kieffer, H.H.	35
King, E.A.	10, 35, 81, 85
King, J.S.	30, 51, 60, 61, 62, 63, 64
Kirk, D.B.	54
Kirste, E.	38
Kirsten, T.	38
Kliore, A.	32
Kobrick, M.	9
Kochel, R.C.	75, 76
Koenig, B.	52, 53
Kowal, C.	10
Krankowsky, D.	38
Krinsley, D.H.	69

L

LaFleur, A.L.	94
Lane, A.L.	19
Larsen, B.	60
Lauer, T.	5, 8, 10
Leach, R.	68
Leberle, F.	96

Lebofsky, L.A.	10, 19, 36
Lebofsky, M.J.	10
Lecar, M.	14
Lederberg, J.	40
Lennartz, F.	67
Levinthal, E.C.	40, 96
Liebes, S., Jr.	39, 42, 96
Lingenfelter, R.E.	53
Lipa, B.J.	42
Lucchitta, B.K.	36, 81
Lucke, R.	96
Luthey, J.L.	97

M

Maderazzo, M.	34
Magni, G.	6, 7
Malin, M.C.	33, 35, 36, 39, 41, 52, 62, 76, 85
Marsden, B.G.	10
Martin, T.Z.	35
Mason, R.	36
Mass, C.	40
Massaro, E.	6
Masson, Ph-	37, 40
Masursky, H.	29, 30, 31, 33, 35, 37, 43, 49, 52, 60, 62, 76, 81, 94, 96
Matson, D.L.	8, 10, 32
Matthews, M.S.	5
McCauley, C.K.	67
McCauley, J.F.	37, 52, 67, 68, 69, 71, 81, 85
McCord, T.B.	7, 8, 10, 29, 34, 38, 45, 97
McDonnell, J.A.M.	15
McFadden, L.	10
McGetchin, T.R.	35, 38, 43
McGill, G.E.	33, 34, 37, 45, 52
McKee, E.D.	67, 69, 70
McMacken, D.K.	89
Melosh, H.J.	31, 38
Mendell, W.	54
Merrill, R.B.	13, 42, 51
Metzger, A.E.	96, 97
Meyer, J.D.	81
Michel, K.W.	38
Minear, J.W.	42
Miner, E.D.	35
Mink, D.	38
Moore, H.J.	34, 39, 42, 45, 62
Morris, E.C.	29, 39, 82
Morton, J.B.	68
Müller, E.A.	12
Mumma, M.	14
Munch, G.	35

Murray, B.C.	39
Murray, J.B.	59, 61, 62, 96
Mutch, T.A.	29, 34, 39, 40, 50

N

Nagel, K.	10, 52
Nagy, A.F.	5, 34
Nash, D.B.	19
Nelson, R.	19
Neubauer, F.M.	38
Neugebauer, M.M.	5, 35
Neukum, G.	10, 38, 52, 53
Neumann, E.R.	60
Newburn, R.L.	5
Niemann, H.B.O.	5
Norris, D.	96
Nummedal, D.	50, 51, 75, 76, 77

O

O'Donnell, W.P.	33, 40
Okal, E.A.	23
O'Leary, B.	7, 8
Orgel, L.	94
Oro, J.	94
Osborne, M.	98
Owen, T.C.	5, 32, 43, 94

P

Palluconi, F.D.	35
Pang, K.D.	19
Pansecchi, L.	12
Papson, R.	42, 62, 63, 68, 70, 71
Park, S.K.	34, 96
Parker, R.H.	97
Parkin, K.M.	98
Parotto, M.	49
Patterson, W.R.	34, 96, 97
Patton, P.C.	75, 77
Peale, S.J.	10, 11, 20, 23
Pehl, R.H.	97
Pepin, R.O.	13, 51, 52, 53
Peterfreund, A.R.	35
Peterson, J.E.	53, 63, 82
Pettengill, G.H.	35, 37
Phillips, R.J.	23, 24, 37, 40
Pidek, D.	67
Pierce, D.B.	68
Pieri, D.C.	29
Pieters, C.	10, 38
Pike, R.J.	63
Podgorny, I.M.	7
Pollack, J.B.	5, 19, 40, 68, 69, 70, 71

Pomeroy, J.H.	25
Poscolieri, M.	49, 50
Potani, Yu. M.	7
Potter, D.B.	82
Pozzi, F.	5, 6
Prinn, R.G.	34, 35
Pryor, C.P.	8

Q

Quick, J.E.	94
------------------	----

R

Reilly, T.J.	96
Reynolds, R.T.	23
Roddy, D.J.	13, 49, 51, 52, 53
Roemer, E.	10
Rose, H.J. Jr.	29, 34, 44, 93, 94, 95
Ross, D.J.	8
Roth, J.A.	89
Roth, L.E.	40, 53, 63
Rowe, C.D.	94, 95
Rumsey, H., Jr.	33, 41
Rushneck, D.R.	94
Russell, C.T.	37
Rycroft, M.J.	11

S

Sagan, C.	11, 29, 40, 41, 43, 63, 67, 70, 71, 77
Salkeld, R.	8
Salomone, M.	31, 67
Sanchez, E.M.	43
Sanchez, P.G.	41
Sanders, J.	8
Saunders, R.S.	23, 33, 36, 39, 40, 41, 53, 63, 70
Scarf, F.L.	5
Schaber, G.G.	23, 24, 37, 41, 53, 62, 76, 82, 85, 94
Schnopper, H.W.	97
Schubart, J.	38
Schubert, G.	23, 24, 30, 37, 53, 63
Schultz, P.H.	41, 42, 44, 53, 54, 60, 63
Schuster, H.E.	12
Schwartz, A.A.	96
Scott, D.H.	41, 42, 51, 54, 82, 85
Scott, R.F.	39, 42
Sebok, W.	8, 10, 11
Seidel, B.	32
Sekanina, Z.	5, 10, 11, 12
Settle, M.	61, 63
Shapiro, I.I.	37

Shelton, J.S.	42
Shoemaker, E.M.	8, 9, 12, 13
Shorthill, R.W.	39, 42
Simonds, C.H.	42
Simonds, P.	94
Simpson, E.J.	76
Simpson, R.A.	42, 43, 54
Singer, R.B.	38, 98
Sjogren, W.L.	23, 24
Sleep, N.H.	24
Smiley, T.	67
Smith, B.A.	30, 43, 96
Smith, E.I.	54
Smith, E.J.	13
Smith, R.S.U.	70, 71
Smoluchowski, R.	13, 14, 24
Smyth	43
Soderblom, L.A.	30, 43, 54, 81
Solomon, S.C.	24, 42
Sonett, C.P.	7, 9, 13, 14, 25
Spear, D.B.	63, 64
Spitzer, C.R.	39, 42
Spudis, P.D.	43, 61, 63, 68, 70, 71
Stephens, J.B.	93
Stöffler, D.	38
Storm, D.	60
Strickland, A.C.	11
Strobell, M.E.	37, 76, 81
Strom, R.G.	32, 43, 85
Stromquist, A.W.	43
Sulentic, J.W.	13
Sung, C.M.	98
Suomi, V.E.	43
Sweetnam, D.	32

T

Tauber, M.E.	54
Tepper, L.	98
Terrile, R.J.	53
Theilig, E.	33, 61, 71
Thomas, G.E.	5
Thomas, I.	71
Thomas, P.	20, 37, 40, 44
Thorpe, T.E.	96
Tice, A.R.	93
Tiernan, M.	23
Toksöz, M.N.	23, 25
Tolson, R.H.	20
Toon, O.B.	70
Toulmin, P., III	29, 35, 44, 93, 94, 95
Trask, N.J.	24, 37, 44, 54, 85, 96
Traving, G.	38
Truran, J.W.	5

Tucker, R. 96
 Turkevich, A.L. 96, 98
 Tyler, G.L. 42, 43, 45, 54

U

Underwood, J.R., Jr. 29, 39, 42, 61, 85

V

Van Camp, W. 40
 Varnell, L.S. 97
 Veeder, G.J. 10, 19
 Veverka, J. 5, 19, 20, 30, 40, 41, 68, 70, 71
 Vilas, F. 45

W

Wadge, G. 64
 Wahmann, R. 43, 68
 Walker, G.P.L. 61, 62, 64, 96
 Wall, S.D. 34, 67, 96, 97
 Wallace, D. 76
 Ward, W.A. 67, 69, 71
 Wasson, J.T. 5
 Watkins, J.A. 42
 Weeks, W.F. 32
 Wellman, J.B. 30, 96
 Wells, E. 96
 Wenner, D.B. 43

West, M.N. 82
 Wetherill, G.W. 5
 Whipple, F.L. 14, 15
 White, B.R. 68, 69, 71
 Wilbur, C.L. 45, 60
 Wilhems, D.E. 64
 Wilkening, L.L. 5
 Willett, J.B. 97
 Williams, J.G. 13
 Williams, R.S. 69
 Wise, D.U. 42, 52, 53
 Wiskerchen, M.J. 9, 14, 25
 Wolf, M.R. 97
 Wolfe, M.R. 40
 Wolfe, R.F. 13
 Womer, M. 42, 64, 68, 70, 71
 Wonorow, A. 55
 Wood, C.A. 34, 45, 50, 51, 55, 61, 64
 Wood, J.A. 5
 Wu, S.S.C. 90

Y

Young, R.E. 23, 24, 30
 Young, R.L. 35

Z

Zahn, U.v. 38
 Zelinsky, D. 8, 9, 10